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Introduction from source/README

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Note: This is a working draft that will continue to be edited. ***Last updated: 15 June 2021****. Please refresh this manual every time you open it to ensure you are viewing the most recent version.*

If you have questions/concerns regarding this guidance, please contact the FWS SA National Data Steward (sadatasteward@fws.gov) or Tammy Patterson (tpatterson@usgs.gov until August 1).

Introduction

This manual describes the requirements and best practices for the creation of high-quality and consistent metadata records for projects and products for USFWS Science Applications. These metadata requirements conform to the standardized metadata format agreed upon by the SA Data Management Working Group and meets USFWS policy requirements for data management. This metadata drives the unified SA Science Catalog, where SA projects and products are discoverable, accessible, and usable.

USFWS Data Management Integration

Metadata creation is part of the Maintain step of the Data Management Lifecycle. Guidance is also available in the USFWS data management handbook.

Metadata and mdEditor

The metadata editing tool employed to create and support metadata requirements is mdEditor. This tool was an extension of an initiative by the Alaska Data Integration Working Group (ADIwg) and adopted by SA.

This manual refers to the creation of SA metadata specifically. If you want information on the creation of other metadata records using mdEditor, or more information in general, please refer to the mdEditor User Manual.

Who Should Use this Manual

This guide is for anyone creating or updating metadata for SA-related projects and products. The primary purpose is to describe in detail how to develop metadata for items for inclusion in the SA Science Catalog, but the tool can also be used to track any project or funding.

The metadata requirements described here apply to science projects and products that were funded by SA (for more details, see the Project, Products, and Contacts section).

How to Use this Manual

Directly accessing this manual from the internet is the recommended way to use this manual. By doing so, you will guarantee that you are using the current version since it is a live document and any updates can be made instantly. The online version will also have the best functionality and graphical display.

If needed, you can download this manual as a PDF and save a copy to your computer for printing or offline use. If you choose this method, be sure to reference the online version regularly and save a new PDF as updates are made to the online version. Also note that not all of the formatting will be exactly the same as the online version.

> Some of the stylized text boxes (like this one) will not translate to the PDF exactly. The text will still be outlined with a background color, but the icon to the left of the text will not display in the PDF.

Disclaimer

This manual was developed while mdEditor was also being developed. Due to this, there may be minor discrepancies between screenshots in the manual and the current production version of mdEditor.

Roles & Responsibilities (draft)

- This document was last updated (honkit.time): Mon Apr 24 2023 17:53:21 GMT-0800 (Alaska Daylight Time)
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ARDs

Definition: Assistant Regional Directors for Science Applications

- Responsible for supporting staff time and allocating resources to follow the SA Data Management Plan through their entire chain of command
- Ensure data management responsibilities are followed when SA funds go are allocated outside the program (e.g., to another FWS program)
- Ensure Performance Appraisal Plans reflect responsibilities for data stewardship
- Sign memo stating a project intended for funding is not duplicative research or other science activity (Science Project) and therefore does not need to go through any additional steps in the SA Non-Duplication Policy.
- Sign CASC Consultation Certification memo stating the CASC consultation took place and identified not duplication of funding between SA and a CASC. For grants and cooperative agreements, this can be certified by checking the appropriate check box on the Award Checklist - FWS Form 3-2460.

AD and Deputy AD

Definition: Assistant Director and Deputy Assistant Director for Science Applications

- Provide program leadership and accountability to ensure all SA data management, Science Catalog, internal tracking, and non-duplication policies are followed across the program.
- Ensure data management responsibilities are followed when SA funds go outside the program (e.g., to another FWS program)

HQ Staff

Definition: Science Applications HQ staff who are responsible for coordinating and leading SA data management efforts, including but not limited to: SA HQ Science Coordinators and the SA HQ Grants Manager.

- Ensure data management responsibilities are followed when SA funds go outside the program (e.g., to another FWS program)
- Create CASC consultation Google Form to be sent to CASC director(s)

SA Contracting Officer

Definition: SA staff who serve as Contracting officials and Contracting Office Representatives and **are the primary liaison with the contracting personnel who issue and administer contracts.

- Work with SA Project Officer to ensure that all data procurement contracts and agreements make appropriate reference to data management and, at a minimum, define the general data management requirements within every contract and agreement.

SA Grants Manager

Definition: SA staff who are responsible for issuing financial assistance awards or who are the primary liaison(s) with WSFR staff who issue financial assistance awards.

- Work with SA Project Officer to ensure that all data procurement agreements make appropriate reference to data management and, at a minimum, define the general data management requirements within every agreement.

SA Project Officer

Definition: SA personnel responsible for administering grants and cooperative agreements, reviewing and selecting proposals, reviewing and approving interim and final reports, and ensuring receipt of deliverables.

- Ensure SA data management, Science Catalog, internal tracking, and non-duplication policies and requirements are followed for the projects they manage. This can be done themselves, requiring the work from PIs (e.g. product metadata), or delegating the work to a data manager/steward
  - Include requirement for data management plan
  - Include requirements for project and product metadata
  - Ensure the project record is posted to ScienceBase within 30 days
  - Ensure the full metadata is updated
- Ensure scope of work contains requirements for metadata and data management plan deliverables.
- Ensure all Non-duplication documentation (memos, SB searches) are added to award file.

Non-SA Project Officer

Definition: Non-SA staff (still FWS) who serve as the Project Officer on agreements using SA funds.

- Ensure scope of work contains requirements for metadata and data management plan deliverables.
- Ensure all Non-duplication documentation (memos, SB searches) are added to award file.
- Work with SA Data Steward/ARD to ensure that all SA data management, Science Catalog, internal tracking, and non-duplication policies and requirements are followed.

Non-SA Principal Investigator

Definition: An externally-funded recipient of SA funds via grant, cooperative agreement, contract, or inter-agency agreement, who is responsible for leading the funded project and providing deliverables to SA.

- Transfer deliverables to SA Project Officer
- Write and transfer metadata to SA Project Officer
- Works with Data Steward to develop a Data Management Plan

SA Principal Investigator

Definition: SA staff who is responsible for leading the internal project who also assumes the roleof Project Officer.

- Assumes role of SA Project Officer
- Ensures deliverables are loaded to ScienceBase
- Write/ ensures project and product metadata meets SA standards
- Works with Data Steward to develop a Data Management Plan

Data Steward

Definition: Any SA staff or personnel working on behalf of SA (e.g., contractor) who performs a data management action - writing, reviewing, or publishing metadata; publishing deliverables; etc. Can be project officer, data manager, or other staff. Often a Data manager fills this role.

- Assist non-SA Project Officers with ensuring SA data management, Science Catalog, internal tracking, and non-duplication policies and requirements are followed.

Science Coordinators

Goals of SA Data Management

> We envision a well-functioning data management, integration, and sharing process that integrates, at minimum, the products of SA-funded projects with those from regionally-funded projects, and that support the data lifecycle in a coordinated manner.—Conservation Science Plan v.1

In the beginning, Science Applications was leading the Landscape Conservation Cooperatives: A network of individual, geographically distinct partnerships coordinated by SA. The 22 Landscape Conservation Cooperatives (LCCs) developed uniquely and independently based on the needs of their regions and partnerships. As a result, there was not a single workflow for data management and sharing among the LCCs. Instead there were multiple workflows, varying formats, and different use cases for managing and sharing the results of LCC-funded projects. Further, because LCCs placed varying levels of importance on data management, LCCs varied greatly in their staff capacity for data management.

While the individual workflows met the needs of the individual LCCs and their partner organizations, they were not enough to achieve the goal of a network-wide, integrated dynamic project and product database. Through collective agreement, LCCs agreed they needed to modify their workflows to create comparable project and product metadata.

Procedurally, the LCC Network has committed to using ScienceBase for cataloging all funded projects and associated products. As per the LCC Network's response to a DOI Office of the Inspector General 2017 report, individual LCCs must contribute their project and product metadata to the ScienceBase repository by the end of 2017 and mid-2018 respectively. In tandem with this ScienceBase requirement, the LCC Network is required to post data products to data.gov and this data conduit will be in place with products cataloged by end of 2018.

While SA has refocused on FWS priorities, the need for data management, integration, and sharing process remains essential to mission of FWS and SA. This guidance was developed by the SA Data Management Working Group (DMWG) with the leadership of the Architecture Subgroup (ASG).

Science Catalog Goals and Objectives

Goal 1: Provide an easily searchable repository for SA-funded science projects and products through the SA Science Catalog.

Objective 1.1: Enable efficient and consistent searching and filtering across all SA projects and products>

Objective 1.2: Ensure resource managers and partners can continue to find and use LCC information and products for decision-making and conservation action on the landscape.

Objective 1.3: Support users (e.g., resource managers, scientists, auditors, graduate students) in identifying remaining/future science needs and preventing future duplication of work by displaying who and what SA has funded.

Objective 1.4: Ensure the SA Science Catalog instance will remain accessible through a portable design that can be hosted on fws.gov and elsewhere, if needed.

Goal 2: Increase transparency of SA project funding information.

Objective 2.1: Document how FWS and other sources of funding were used to fund science projects.

Objective 2.2: Enable Science Applications and other key partners to show how FWS and other sources of funding were allocated to partners (e.g., states, tribes, federal agencies).

Objective 2.3: Allow data managers to use the Science Catalog as an internal project tracking system.

Goal 3: Demonstrate the impact and value of the investment in landscape-scale conservation.

Objective 3.1: Enable Science Applications and other key partners to show how investments by FWS and other federal programs leveraged additional funding by partners.

Objective 3.2: Demonstrate the depth and breadth of the projects and products produced by SA and the partners and collaborators involved.

Goal 4: Illustrate the link between SA-funded applied science projects and today’s conservation challenges.

Objective 4.1: Link SA projects and products to overarching Conservation Issues.

SA Science Metadata Catalog

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A more detailed look at the metadata requirements and architecture behind the Science Applications Science Catalog.

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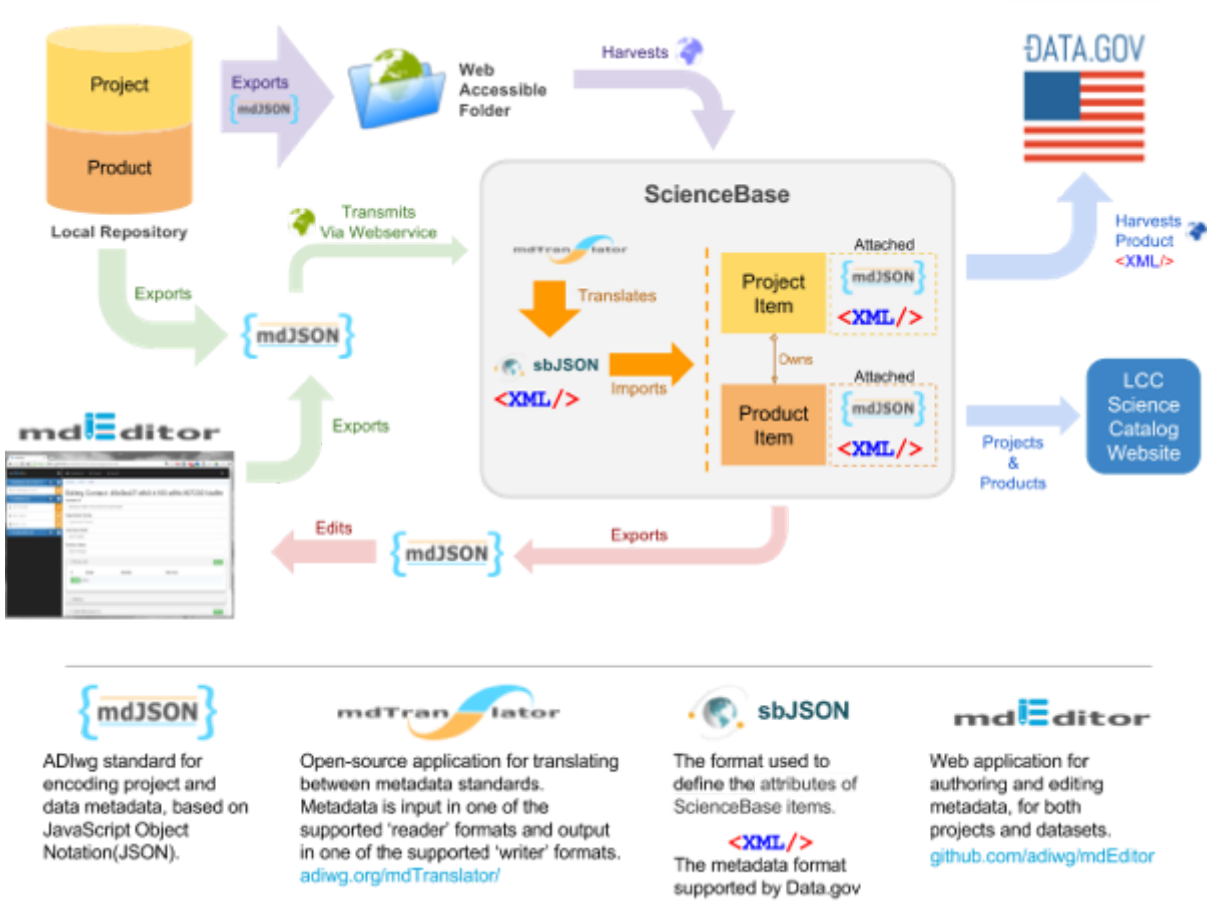
Overview2

The SA Science Catalog collates the metadata from all FWS regions and Headquarters. It allows for user-defined searching and filtering of projects and products as well as access to products for download. Users can see what has been funded, which can help prevent duplication of work. The SA Science Catalog also enables reporting, such as funding summaries or project examples based on particular geographies, species, organization, year, or other categories of interest.

Architecture2 [editing in progress]

At present, SA creates and edits metadata in mdEditor and then publish the metadata to ScienceBase, where it can be channeled to the SA Science Catalog and data.gov. The mdTranslator tool is integrated with mdEditor so you can create metadata once, and then convert and publish the metadata in your desired format, such as mdJSON for the SA Science Catalog, sbJSON for ScienceBase, XML for data.gov, and FGDC for geospatial data.

The following diagram details the LCC Science Catalog system architecture.



1. Items are imported from a database (like ScienceBase), or created directly in mdEditor.
2. mdJSON files can also be stored in a local repository and then transmitted via a web service to ScienceBase. Alternately, the local files can be exported to a web accessible folder and then harvested by ScienceBase.
3. The mdTranslator converts the mdJSON files into sbJSON (the ScienceBase JSON format), and XML.
4. Items are exported from ScienceBase to: Data.gov as XML; the SA Science Catalog website as Projects and Products; or into mdEditor as mdJSON.

Projects, Products, Contacts

Understanding Projects, Products, and Contacts

Contacts, projects, and products all share a relationship in mdEditor and are each entered independently.

Projects

A project encompasses a discrete effort on a particular topic with defined goals or objectives. The target projects for the SA Science Catalog are science projects whose topics and resulting products have value to partners or the public being able to discover and access them. Many projects are the result of SA issued financial assistance agreements, contracts, or inter-agency agreements. However, not everything funded through one of these mechanisms needs to be in the Science Catalog. For example, a contract to maintain an individual website likely does not quality as a "science project" nor does it provide public-relevant information. A grant to develop an interactive landscape-conservation tool, however, would be a science project that results in public-relevant information.

SA projects can also include other defined efforts that did not necessarily require the awarding of funds (i.e. internal efforts).

> Individual data managers may want to track other projects using the same metadata format and store that information on ScienceBase, without publishing it to the SA Science Catalog.

Products

A product is a resource, usually (but not necessarily) developed as an output from a project. Products can be tools, data, maps, reports, presentations, workshops, etc. These will usually be the direct result of a project though there may be some products without a parent project.

Not every output of a project is necessarily a product, however. For example, meeting minutes do not have standalone value as a publicly-available resource. It is up to each data manager to determine which outputs should be entered as products.

Contacts

Contacts are the individuals and organizations involved with projects and products (e.g., investigators, collaborators, funders). Contacts are entered once in mdEditor and can be added to multiple projects and products.

> Consult the Contacts section for information on adding contacts.

Relationships

Projects and Products will always have a relationship with contacts. Projects will always have at least one point of contact (FWS SA National Data Steward). Additional contact relationships may include project authors, metadata creators, funders, principal investigators, publishers, distributors, and many others. One crucial contact relationship

between contacts, projects, and products is the role of the individual(s) and/or organization(s) who provided funding. This may include a direct full contributor or any partners that provided funding.

> Contact types are specified in the contact record (examples: federal, state, NGO). Specific roles for each contact are defined within the respective project and product records (examples: principal investigator, collaborator).

Products are often the results of projects. mdEditor defines the relationships between projects and products through the Associated feature.

> Consult either the Associating Records: Product or Associating Records: Project section for more information).

Non Duplication Policy Guidance

Non Duplication Policy

Based on a 2017 OIG audit, minimal metadata fields are required to be published within 30-days of project funding. The purpose of this policy is to share information with partners regarding what science projects SA is supporting. This transparency helps to reduce duplication of efforts across funding agencies and allows partners to discover and engage in SA supported science as desired.

Quick Reference: Project metadata for Non Duplication Policy	**Required**
Basic Information: Title, Status	Required
Point of Contacts (see Main Tab: Project)	Required
Description: Abstract	Required
Time Period	Required
Funding: Award Number, amount, source, fiscal year, recipients	Required

Below is a copy of the Non Duplication Policy guidance memo, in detail for reference:

Guidance for Preventing Duplication of Research and Other Science Activities

Background

On September 1, 2017, and December 7, 2017, the U.S. Fish and Wildlife Service (Service) issued memos detailing actions all Assistant Regional Directors, Science Applications (SA-ARDs), must take to prevent duplication of research across Science Applications and United States Geological Survey Climate Adaptation Science Centers (CASCs). This document provides further guidance for how to best comply with those memos, in addition to other measures that can be undertaken to prevent duplicative research across Science Applications, CASCs, and other federal programs. See this dashboard for a list of resources.

Summary of Required Actions

For all financial assistance and inter-/intra-agency agreements or contracts for research projects and other science activities you must do what is outlined in the list below. Unless otherwise specified, the following applies to all science projects funded with SA applications monies (1410, 1420, and 1430):

1. First determine if the project is a research project or other science activity. Consider whether the project will result in a science product (e.g. survey, study, tool, assessment, publication, etc.).

a. If you decide that it IS NOT research or another type of other science activity, document your decision using this template and attach it to the official award file.

1. i. If you decide that it IS research or another type of science activity, proceed with the steps outlined below.
2. Search for duplicative projects in ScienceBase (use the ScienceBase search template).

3. Add this language to the NOFO: “Applicants must document literature searches (e.g. academic literature, industry publication, ScienceBase, and Data.gov). Applicants should explain why their project is non-duplicative and how it will augment existing knowledge.”

4. Include peer review as part of project selection.
5. You must document consultation with the appropriate CASC director(s). Send an email to Anna-Marie York (Anna-Marie_York@fws.gov) to obtain an electronic form to document consultation with CASC directors. The form link can be shared with anyone in the Department of the Interior and offers the ability to create a spreadsheet that summarizes responses, including a time stamp for when each respondent completed the form.
6. After consultation with CASCs is complete, the SA-ARD must provide a memo to the file (template here) certifying that consultation occurred. (Note: for grants and cooperative agreements the ARD may instead certify consultation was done by checking the appropriate box and signing the New Award Checklist - FWS Form 3-2460). Include a copy of the spreadsheet of responses as part of the official award file.

7. Enter all project information into ScienceBase as soon as possible, but within 30 days of the agreement being in place (required per September 2017 memo). Provide as much information about projects as possible and update regularly, including adding entries for products within 30 days of receipt. See the ScienceBase Guidance section below for further details.

Required and Recommended Practices

As denoted by “(required)” in the list below, only practices 2, 5, and 6 are required per policy; the others are recommended but are not required. Note: required actions are the same as those listed above in the Summary of Required Actions. Unless otherwise specified, the following applies to all science projects funded with SA applications monies (1410, 1420, and 1430).

1. Determine if the project is a research project or other science activity (required). Consider whether the project will result in a science product (e.g. survey, study, tool, assessment, publication, etc.).

a. If you decide that it IS NOT research or another type of other science activity, document your decision using this template and attach it to the official award file (required).

1. i. If you decide that it IS research or another type of science activity, proceed with the steps outlined below.
2. Consider coordinating with other federal agencies prior to the project funding phase:

3. i. You may consult informally during project development, or, when appropriate, invite staff from CASCs and other federal programs to be peer reviewers.
   ii. When invited and able, consider participating in the project development and selection phases for other agencies’ research programs.
4. Search ScienceBase.gov for potentially duplicative projects prior to funding (required):

a. Document your search of ScienceBase using the ScienceBase search template.

1. i. Do multiple searches (i.e. varying search terms and criteria) as necessary.
   ii. Be expansive in your search – use a variety of search terms and limit the scope only as necessary. You should not limit your search to CASC communities.

d. Include copies of ScienceBase search template and corresponding results (spreadsheet) in the financial award file.

1. Repeat Practice 2 at https://catalog.data.gov and any other relevant federal databases. You can use the ScienceBase search template to document these searches, though note that some of the instructions on the template are specific to ScienceBase.

2. Insert this language in NOFO: “Applicants must document literature searchers (e.g. academic literature, industry publication, ScienceBase, and Data.gov). Applicants should explain why their project is non-duplicative and how it will augment existing knowledge.”(required)

3. Consult with CASCs once you have selected a project to fund, but prior to funding. Email Anna-Marie_York@fws.gov to obtain a link to a form to send to CASC directors (required).
    i. Use the results of ScienceBase searches, informal consultations, and/or serving on review panels to identify CASCs that have funded similar research. You may also consider any CASC in your project geography. Aim to be expansive.
    ii. Consider sending the form to leadership from other federal agencies as well.
    iii. Using google forms will allow us to download a spreadsheet of time-stamped responses. Email Anna_Marie_York@fws.gov for a copy of the resulting spreadsheet.
    iv. Include a copy of the responses (spreadsheet) in the financial award file.
4. After consultation with CASCs is complete, the SA-ARD must provide a memo to the file (template here) certifying that consultation occurred. (Note: for grants and cooperative agreements the ARD may instead certify consultation was done by checking the appropriate box and signing the New Award Checklist - FWS Form 3-2460). Include a copy of the spreadsheet of responses as part of the official award file.

5. Enter all project information into ScienceBase as soon as possible, but within 30 days of the agreement being in place (required per September 2017 memo). Provide as much information about projects as possible and update regularly, including adding entries for products within 30 days of receipt. See the ScienceBase Guidance section below for further details.

ScienceBase Guidance

1. Every region has folders in ScienceBase to put basic information about the science projects you have funded since September 30, 2017; per policy this is required within 30 days of funding a project or receiving a product. Here is what’s required for each project/product:
2. i. Title
    ii. PI/funding recipient’s[1] name and contact info,
    iii. PI/Funding recipient’s organization,
    iv. start date,
    v. projected end date,
    vi. abstract,
    vii. award ID,
    viii. funding sources and amounts.
3. You can use mdEditor to make the records if that is your preference, or do it directly in ScienceBase. Here is a video tutorial showing how to enter directly on ScienceBase.
4. If you have a science activity that more than one FWS region contributed funds to, but there was a “lead region” that actually administered a single financial award / contract, then that lead region should create and maintain a single record in ScienceBase for the project and its products. The project record should list the total amount of Service funds in the financial / award contract (i.e., all regions combined).
5. If you have a science activity with multiple financial awards / contracts, then each award / contract should have its own ScienceBase record (note: modifications ARE NOT considered new awards / contracts). Whichever region administered each financial award / contract should create and maintain project and product records in ScienceBase. Please include the ScienceBase URL(s) for the related projects in the abstract. Example language: “this project is part of a larger initiative; you can find related records here: URL 1, URL 2, …”).
6. If you need “editing” access to your region’s ScienceBase folder...email Jill (jillian_cohen@fws.gov).

7. If you want a little more detail about what the “ScienceBase” policy is…Start with slides from a presentation Jill gave to the Data Management Working Group August 2018.
8. If you want all the details about the non-duplication policies...This dashboard is your gateway.
9. If you read through the slides and other documents and still have questions, or just want to check to make sure you’re doing things right...Call or email Jill (jillian_cohen@fws.gov; 703.358.1764).

[1] The memo itself uses the term “project leader” instead of PI/funding recipient.

Workflow

Suggested Workflow for SA Metadata and mdEditor

The following is a suggested workflow for using mdEditor to create, publish, and save metadata records for SA projects and products.

Step 1: Gather information needed for your metadata entries.

Have information about your contacts, projects, and products on hand before you begin creating metadata records. Key information to gather includes project proposals, funding agreements and amounts, project reports, product information, and contact information for individuals and organizations involved in the projects.

Step 2: Open mdEditor.

The direct link to mdEditor is https://go.mdeditor.org. Choose the browser you plan to use for mdEditor and bookmark this link.

mdEditor can also be accessed from its homepage at https://www.mdeditor.org/. This site provides some background information and Frequently Asked Questions about mdEditor.

Always hit *refresh* in your browser before each work session (and periodically throughout the session) to ensure that you are using the most updated version of mdEditor.

Step 3: Set the correct default Settings.

In mdEditor settings, set the SA-specific settings for importing from ScienceBase, Metadata Repositories, and Publishing (See Settings).

Step 4: Create or import Contacts.

Contacts must be created or uploaded before they can be added to project and product metadata records.

Use the "contacts seed file" that contains pre-filled information and standard naming conventions for all SA regions, common federal agencies, and the SA Network Data Steward. (link to contact seed file here)

Step 5: Create or import Projects.

If you have an existing ScienceBase project record that has not been edited in mdEditor, import the ScienceBase record to create a new mdEditor record. Workflow guidance.

If you have no existing metadata for a project, create an mdEditor project record from scratch. Workflow guidance.

If you have already created an mdEditor record for the project, import the mdEditor file to continue editing. Import guidance.

Step 6: Create or import Products.

If you have an existing ScienceBase product record that has not been edited in mdEditor, import the ScienceBase record to create a new mdEditor record.

If you have no existing metadata for a product, create an mdEditor product record from scratch.

If you have already created an mdEditor record for the product, import the mdEditor file to continue editing.

Step 7: For applicable Products, create or import Data Dictionaries.

Step 8: Complete metadata.

Decide on your desired file management approach and complete your metadata accordingly. See the File Management section for options and instructions.

Step 9: Create desired Associations between Projects and/or Products.

Associations can be either associated from a project or associated from a product.

Step 10: Publish your records to ScienceBase.

Step 11: Export your records and contacts for backup, transfer, or sharing.

You may want to export working backups before publishing depending on your situation, but archival exports should be done after publishing since publishing can alter records, like adding or changing a ScienceBase ID.

Step 12: Review the resulting entries in the SA Science Catalog.

The Science Catalog updates overnight so you should review newly-published records the day after you publish to ScienceBase. This will be one of your best quality control checks.

Step 13: Consult with the different QA/QC Resources.

See the QA/QC Resources page for the different tools available to check your metadata.

Metadata From Scratch

Follow this workflow if you are creating mdJSON metadata for the very first time and you do not have existing project or product metadata already on ScienceBase.

Step 1: Gather information needed for your metadata entries.

Have information about your contacts, projects, and products on hand before you begin creating metadata records. Key information to gather includes project proposals, funding agreements and amounts, project reports, product information, and contact information for individuals and organizations involved in the projects.

Use the "contacts seed file" that contains pre-filled information and standard naming conventions for all SA regions, common federal agencies, and the SA National Data Steward.

Step 2: Open mdEditor.

The direct link to mdEditor is https://go.mdeditor.org. Choose the browser you plan to use for mdEditor and bookmark this link.

mdEditor can also be accessed from its homepage at https://www.mdeditor.org/. This site provides some background information and Frequently Asked Questions about mdEditor.

Step 3: Set the correct default Settings.

In mdEditor settings, set the SA-specific settings for Importing, Metadata Repositories, and Publishing.

Step 4: Create Contacts.

Contacts must be created or uploaded before they can be added to project and product metadata records.

Step 5: Create Projects.

If you have an existing ScienceBase project record that has not been edited in mdEditor, import the ScienceBase record to create a new mdEditor record.

If you have no existing metadata for a project, create an mdEditor project record from scratch.

If you have already created an mdEditor record for the project, import the mdEditor file to continue editing.

Step 6: Create Products.

If you have an existing ScienceBase product record that has not been edited in mdEditor, import the ScienceBase record to create a new mdEditor record.

If you have no existing metadata for a product, create an mdEditor product record from scratch.

If you have already created an mdEditor record for the product, import the mdEditor file to continue editing.

Step 7: For applicable Products, create Data Dictionaries.

Step 8: Complete metadata.

Decide on your desired file management approach and complete your metadata accordingly. See the File Management section for options and instructions.

Step 9: Create desired Associations between Projects and/or Products.

Associations can be either associated from a project or associated from a product.

Step 10: Publish your records to ScienceBase.

Step 11: Export your records and contacts for backup, transfer, or sharing.

You may want to export working backups before publishing depending on your situation, but archival exports should be done after publishing since publishing can alter records, like adding or changing a ScienceBase ID.

Step 12: Review the resulting entries in the SA Science Catalog.

The Science Catalog updates overnight so you should review newly-published records the day after you publish to ScienceBase. This will be one of your best quality control checks.

Metadata From ScienceBase

Follow this workflow if you are creating mdJSON for the first time and already have project or product metadata on ScienceBase.

[content to be added]

Metadata Editing / Re-Publishing

Follow this workflow if you have already created and published mdJSON to ScienceBase and need to update the metadata and re-publish to ScienceBase.

Step 1: Gather information needed for your metadata entries.

Have the necessary information to update your metadata records readily accessible before you begin.

Step 2: Open mdEditor.

The direct link to mdEditor is https://go.mdeditor.org. Choose the browser you plan to use for mdEditor and bookmark this link.

mdEditor can also be accessed from its homepage at https://www.mdeditor.org/. This site provides some background information and Frequently Asked Questions about mdEditor.

Step 3: Import mdEditor file(s).

Import the mdEditor file(s) that you wish to edit. Remember, once you have edited and published metadata from mdEditor, you must always use mdEditor to update the metadata (rather than make changes directly on ScienceBase). The Science Catalog will only update based on what is in mdJSON (and not sbJSON).

Step 4: Check the Settings.

Ensure the correct LCC-specific settings are in place for Importing, Metadata Repositories, and Publishing.

Step 5: Update Contacts.

If you have new contacts to add to your metadata record, create those contacts.

Step 6: Update Projects.

Update/edit metadata as needed.

Step 7: Update Products.

Update/edit metadata as needed.

Step 8: For applicable Products, create, import, or update Data Dictionaries.

Step 9: Check Associations between Projects and/or Products.

If you only updated metadata in existing record that were already associated, you do not need to do anything with the associations.

If you created a new product for your project, then associate those records in mdEditor.

Step 10: Publish your records to ScienceBase.

Check that your record published where expected and that the mdJSON and xml files are attached to the SB Item. Your records should publish to their existing locations. If you added a new product to a project, then it should appear as a new child item to the project.

Step 11: Export your records and contacts for backup, transfer, or sharing.

You may want to export working backups before publishing depending on your situation, but archival exports should be done after publishing since publishing can alter records, like adding or changing a ScienceBase ID.

Step 12: Review the resulting entries in the LCC Science Catalog.

The Science Catalog updates overnight so you should review newly-published records the day after you publish to ScienceBase. This will be one of your best quality control checks.

Step 13: Consult with the different QA/QC Resources.

See the QA/QC Resources page for the different tools available to check your metadata.

PTS Considerations

Consult this section for things you need to consider if you are using the Project Tracking System (PTS) for managing your project metadata.

[content to be added Matt!]

Settings

The settings menu allows for the configuring of user-specific options. Settings must be configured before you create SA metadata.

General Settings

mdEditor Version: The mdEditor version notes the current version of mdEditor. Use this when reporting errors. Errors can be reported at https://github.com/adiwg/mdEditor/issues. You must have a github account in order to post.

Auto-Save: The Auto-Save option will write all changes to local storage when you exit a data entry field. Changes must be manually saved if the Auto-Save feature is turned off.

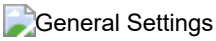
> Auto-Save allows you to save less frequently, but it makes it harder to undo changes that you make to your records. If you stay on the same record, you can cancel changes. But once you leave the record, the record is saved and you can't cancel the change except by manually re-editing the record.

Copy in Edit Mode: All

Delete in Edit Mode: Allow users to delete a record while in edit

Clear All Records: All records can be cleared by clicking the "Clear Storage Cache."

> **Warning**: Clearing all records will delete all of the records currently loaded in mdEditor. Before doing so, use the Export function to make a backup of your records. Otherwise, the records will be permanently lost (unless you previously made a backup copy).


General Settings

SA Specific Settings

These must be implemented before you begin creating metadata records.

(1) Importing from ScienceBase In the Defaults section, set the default Import URL to import items from ScienceBase with the following: https://api.sciencebase.gov/sbmd-service/mdjson/.

(2) Metadata Repositories: In the Defaults section, add two Metadata Repositories.

1. Select **ScienceCatalog** from the Repository drop-down menu. Enter "SA Science Catalog" as the collection title. It is important that the text is entered exactly as written to be included in the Science Catalog.
2. Select **data.gov** from the Repository drop-down menu. For the collection title, enter "Data.gov USFWS Science Applications".


Science Applications settings

> The metadata repository information must be exactly the same for each record with no variations in spelling, spaces, capitalization, etc. Specifying this information in Settings is the best way to ensure the repository information will be consistent across records. It is strongly recommended that you do not type these in by hand on individual metadata records.

(3) Parent Identifier: Under publishing, enter the ScienceBase identifier for your SA Region's ScienceBase project folder in the "Default Parent Identifier" field.

Defaults

Defaults include settings for **Language**, **Character Set**, **Country**, and the **Import URL **(used for defining the default URL for importing).

The following defaults will be pre-loaded:

- default language: English
- default character set: UTF-8
- default location: USA

Also included in **Defaults** are the **Metadata Repositories** (online databases for storing metadata). Once entered in **Settings** these can then be selected for projects and products so that they are flagged to a metadata repository of your choice. See SA Specific Settings for Metadata Repository information above.

Publishing Settings

SA metadata will be published directly to ScienceBase (and from there be sent to the Science Catalog and data.gov).

In the **Default Parent Identifier**, enter your LCC's ScienceBase project folder's ScienceBase ID (SBID). **Default Community** and **Default Organization** are free text fields to describe where your Default Parent Identifier is located.

Export Settings

See the Export section for information about the options available for Exporting.

Profile and Validation Settings

Allows a user to import a custom metadata profile and/or a custom validation schema.

mdEditor Metadata File Management

File management in mdEditor involves consistent and proper handling and storage of mdEditor derived formats of metadata. These files are essential for long-term access to metadata beyond a single work session.

How mdEditor Stores Information

mdEditor stores information on your local computer in your browser's localStorage cache (not the normal file cache). This means that if you use a different browser to access mdEditor, it will not show the metadata records from your original browser. It also means that clearing your browser's cache generally will not delete your mdEditor records. However, depending on your browser's settings, clearing your browser cache may still delete your mdEditor data (e.g., in Chrome, checking the "*cookies and other site data*" option will clear your mdEditor data).

Warning: In mdEditor settings, you can clear your storage cache. Doing so will remove all of the information currently loaded in mdEditor. Reasons you might want to clear your storage cache is due to too much information stored in the cache, or as a way to debug a problem with mdEditor. **It is very important that you back up your records before clearing the mdEditor cache to avoid losing your data.** Consult the Export or Settings section of this manual to learn more.

mdEditor File Format

The underlying format of the metadata from mdEditor is mdJSON, which was created specifically for mdEditor. There are two types of mdJSON files.

1. mdJSON files are the format that is published from mdEditor and made available on ScienceBase and data.gov. Their default file name is ***md_metadata.json***.
2. mdEditor.json files are the files used by mdEditor. They contain extra information, such as settings, that tell mdEditor how to operate. Their default file name is ***mdeditor-timestamp.json***.

mdJSON files can be exported and imported via mdEditor's built-in **Export** and **Import** functionality. The Export functionality allows you to back up and share your records between browsers. The Import functionality lets you load records into mdEditor, either from previously-saved mdEditor session, exported from another browser, or downloaded from ScienceBase.

JSON = JavaScript Object Notation, an open source file format. mdEditor produces mdJSON. ScienceBase has their own specific format, called sbJSON.

mdEditor File Management Strategies

(1) Work on a project-by-project basis.

To keep file size manageable, it is recommended that you work on one project (and its related products and contacts) at a time. You should group said project, products, and contacts together using the same scheme that your LCC uses to organize data.

1. Save each project and affiliated products together as a set. To do this, select “Export” from the top menu, then select the appropriate records (i.e., the target project and its affiliated products) and then click “Export Selected."
2. Save the resulting mdEditor JSON file to your hard drive in a working folder. There should be a separate mdEditor JSON file for each project and all of its products.

(2) Leave information in mdEditor between work sessions.

It is recommended that you leave your contacts in mdEditor between work sessions so that they will be available the next time you need to create metadata records. You can also export your contacts independently of your records for use between browsers.

You can also set up a metadata directory so you can always find the metadata file. This directory can be any folder on your local computer that is easily accessible and will not be deleted.

(3) Export your contacts with your records.

When exporting products or projects, you should also export your entire contact list. If you do not export your contact list, and you later import a record that contains a contact not loaded in mdEditor, you may receive an error and have to re-create and re-enter the contact for that record.

> If contacts records are re-created, it results in another mdEditor identifier being created for a contact, resulting in duplicate contacts. mdEditor does not know that this is an existing contact. You should maintain a single list of your contacts. Having duplicate copies of the same contact is not desirable. It can create confusion as you edit and manage your metadata records and introduce unnecessary errors.

(4) Export frequently to backup your records.

Maintain an “Export All” JSON file each time you finish a work session in mdEditor (or switch browsers, URLs, etc.). This is the most efficient way to backup your records. For more information, consult Export.

It is particularly important that you export your records for backup before using mdEditor's **Clear Storage Cache** functionality (clearing the storage cache will delete any records or data you have entered in mdEditor). Exporting ensures that your data is secure even after clearing the storage cache. Not exporting your data before clearing your cache will result in a permanent loss of records. Consult the Settings section of this manual to learn more.

Import

The Import function loads an mdEditor or mdJSON file into the current mdEditor session. You can also import existing ScienceBase metadata or FGDC (Federal Geographic Data Committee) metadata into mdEditor to create mdJSON.

General Import Settings

Replace vs. Merge

The **Replace/Merge** toggle allows you to either replace or merge the imported records with the records currently loaded in mdEditor. In most instances you should select "Merge." An exception is when you want to import Settings associated with an mdEditor file (see below).

> Selecting "Replace" will remove all metadata records currently in mdEditor and leave only the newly-imported files. If you are importing a record to add to the existing records, choose "Merge."

Import Settings

Only mdEditor files store Settings information; mdJSON files do not. You must import Settings to retain metadata repository information, default ScienceBase parent identifier, and auto-save preference. To import the Settings with an mdEditor file, set the import to "Replace" (be sure you have already saved a backup copy of any files currently in mdEditor). Set the mode back to "Merge" once you've finished importing the Settings.

If you have records already loaded into mdEditor with all desired Settings, then you do not need to re-import Settings when you import additional mdEditor files.

See next sections for specific file format import guidance on mdJSON, sbJSON, and FGDC metadata.

mdJSON

You can click or drag and drop a file onto the **Import Data** button to import a local file.


Import Data

1. Review the selected information. If there is more than one copy of the same metadata record or contact, use the "preview JSON" button to choose the record or contact with the most complete information.
2. Select the records and contacts you want to import.
3. Click on the right hand button “**Click to Import Data.**”


Selected records for import

sbJSON

This method should be used when you have an existing ScienceBase item that has not yet been edited in mdEditor. The ScienceBase item may or may not have the ScienceBase Project facet. Importing the metadata from ScienceBase allows you to use the existing metadata and and not start from scratch in mdEditor.

ScienceBase

1. In the "Import from Online URL field," paste: https://api.sciencebase.gov/sbmd-service/mdjson/

   You can set default import URL to the "ScienceBase API link" in the Settings section and it will pre-populate this field. Refer to the Settings section.

2. Copy and paste the **ScienceBase ID (SBID)** of the item that you wish to import at the end of the URL in the import field, and click the **Import** button.

   The SBID is the string of letters and numbers at the end of the item's ScienceBase URL. For example, "5a70c2d6e4b0a9a2e9dafbdf" would be the SBID for the item at the URL https://www.sciencebase.gov/catalog/item/5a70c2d6e4b0a9a2e9dafbdf

3. Review the selected information. If there is more than one copy of the same metadata record or contact, use the "preview JSON" button to choose the record or contact with the most complete information.

4. Select the records and contacts you want to import.
5. Click on the right hand button "**Click to Import Data.**"

Once you have imported a ScienceBase item and edited the metadata in mdEditor, you must always edit the metadata in mdEditor and re-publish to ScienceBase.

FGDC

[content to be added]

FGDC = Federal Geographic Data Committee

Export

The export function allows the current set of metadata records to be saved as an mdEditor or mdJSON file. The saved files can be shared with collaborators, imported into another record set, imported into another browser. Exported mdEditor files should be saved as a backup or archival copy.

Using Export to Backup Records

Exporting records is the only way to save mdEditor files outside of your browser cache. You should backup by exporting an mdEditor JSON file each time you finish a work session in mdEditor or switch browsers.

mdEditor files vs. mdJSON files

mdJSON files can be uploaded and translated to other formats via the mdTranslator application while mdEditor files are exclusive to the mdEditor application and retain all mdEditor information, including Settings.

Best Practices

- For a complete backup, use the **Export All** button. This exports an mdEditor file containing all records and contacts currently loaded in mdEditor.
- When exporting products or projects, you should also export your entire contact list. If you do not export your contact list, and you later import a record that contains a contact not in your mdEditor library, you may receive an error and have to re-create and re-enter the contact to that record.
- It is particularly important that you export your records for backup before using mdEditor's **Clear Storage Cache** functionality (clearing the storage cache will delete any records or data you have entered into the mdEditor). Exporting ensures that your data is secure even after clearing the storage cache. Not exporting your data before clearing your cache will result in a permanent loss of records. Consult the Settings section of this manual to learn more.

Export Options

While exporting data, there are four options available (on the right side of the export data window).

- **Export All**: will export everything currently loaded in mdEditor into a single file. Exports an mdEditor JSON file.
- **Export Selected**: will only export the items you have selected (so individual records, contacts, etc.). If nothing is selected it will be disabled (i.e., grayed out). This exports an mdEditor JSON file.
- **Export mdJSON**: only works for metadata records (i.e., doesn't work for contacts). Exports just the mdJSON file, which is a standalone JSON file you can load into mdTranslator and have translated into other metadata formats. mdJSON files imported into mdEditor are treated as new records and will not merge/update an existing record.
- Clicking the **Include Settings** switch will also export mdEditor settings (only for mdEditor files). Consult the Settings section of this manual to learn about settings.

If you need to switch browsers for mdEditor, or want to send your settings to someone else, you can export the settings. Someone else can then re-import your settings which include the default Metadata Repositories and Publishing Settings. This will give users that you share with information on your items' folder location on ScienceBase and let users know what your default repository is. Consult the Settings section of this manual to learn about settings.

Copy Records

The **Copy** button is located in the mdEditor action menu on the right-hand side of the screen. The Copy Button allows you to make a duplicate of an existing metadata record.

Copying Records

Making a copy of a record can be used to:

- Start a new product, project, or contact record.
- Populate multiple products faster (e.g., multiple workshop reports, a poster based on a publication).
- Create a "template record" for a project that can be used as a starting place for each full metadata record. A template record can contain information commonly used across your projects or products (such as SA contacts).

Use the Copy button carefully:

> Making a copy will generate a new Record ID for the copied record and be named “Copy of …”. All the other info will remain the same including associations. The “Metadata Identifier” is NOT copied but any identifiers in the Main Citation WILL be copied.

> It is extremely important to review all copied identifiers and delete any that do not apply to the new record. Leaving in identifiers that do not belong could result in your new item being published to the wrong location

Before saving, carefully review all information in copied record to ensure all copied info is still relevant to the copied record, particularly any identifiers.

Metadata Requirements Checklist

Below are metadata fields that are required for Project metadata, Data Product metadata, the ScienceBase 30-day policy, and for Digital Object Identifier (DOI) metadata.

Basic Information

Metadata Field	Project metadata	Product metadata	ScienceBase 30-day Policy	DOI metadata
Title	Required****	****Required****	**Required**	**Required**
Status	****Required****	Required****	**Required**	**Required**
Resource Type		****Required****		
Point of Contact	****Required****	****Required****		
Custodian	**Required**	**Required**		
Principal Investigator	As applicable	As applicable	**Required**	
Administrator	**Required**		**Required**	
Administrative Region	**Required**	**Required**		
co-Principal Investigator	As applicable			
Abstract	**Required**	**Required**	**Required**	
Start Date	****Required**	As Applicable	**Required**	
End Date	**Required**	**Required**	**Required**	

Citation Information

Metadata Field	Project metadata	Product metadata	ScienceBase 30-day Policy	DOI metadata
Title	**Required**	**Required**	****	
Acquisition Date		As Applicable		
Creation Date		As Applicable		
Date Updated		As Applicable		
Date Revised		As Applicable		
Date Published		As Applicable		
Principal Investigator	**Required**	**Required**	**Required**	**Required**
Online Resource Name	As Applicable	As Applicable		
Online Resource URL	**Required**	**Required**		
URL Function	As Applicable	As Applicable		
Metadata Identifier	Required	Required		
identifier Namespace	Required	Required		
DOI Identifier		As Applicable		
DOI Namespace		As Applicable		

Metadata Information

Metadata Field	Project metadata	Product metadata	ScienceBase 30-day Policy	DOI metadata
Arthur	**Required**	**Required**		
Publisher	**Required**	**Required**		
Point of Contact	**Required**	**Required**		
Parent Metadata Title	**Required**	**Required**	****	
Metadata Identifier	**Required**	**Required**		
Identifier Namespace	**Required**	**Required**		
Repository or Catalog Name(s)	**Required**	**Required**		
Repository or Catalog Collection Title	**Required**	**Required**		
data.gov Catalog Collection Name		As Applicable		
Maintenance Frequency		As Applicable		

Keywords

Metadata Field	Project metadata	Product metadata	ScienceBase 30-day Policy	DOI metadata
ISO Topic Category	**Required**	**Required**		
SA Priority	**Required**	**Required**		
SA Science Topic	**Required**			
Conservation Action	As Applicable			
Shared Priority	As Applicable			
Strategic Habitat Conservation Component	As Applicable			
Taxonomic Classification (ITIS)	As Applicable	As Applicable		
Geographic Extent	**Required**	**Required**		
Spatial Reference and Resolution	As Applicable	As Applicable		

Distribution Information

Metadata Field	Project metadata	Product metadata	ScienceBase 30-day Policy	DOI metadata
Distributor	****	**Required**		
Online Transfer Name		As Applicable		
Online Transfer URL		As Applicable		
Online Transfer Function		As Applicable		
Online Transfer Application Profile		As Applicable		
Online Transfer Order Process		As Applicable		
Distribution Format name, version, & compression		As Applicable		

Constraints Information

Metadata Field	Project metadata	Product metadata	ScienceBase 30-day Policy	DOI metadata
Access Constraints	****	**Required**		
Use Constraints		As Applicable		
Handling Description		As Applicable		
Other Constraints		As Applicable		

Funding Information

Metadata Field	Project metadata	Product metadata	ScienceBase 30-day Policy	DOI metadata
Award ID	**Required**	****	**Required**	
Sub-activity	**Required**	****		
Funding Code	**Required**			
Amount	**Required**		**Required**	
Source	**Required**		**Required**	
Allocation	**Required**			
Funding Organization	**Required**			
Recipient Organization	**Required**			
Matching Funds	As Applicable			
Fiscal Year	**Required**		**Required**	

Contact Information

Metadata Field	Project metadata	Product metadata	ScienceBase 30-day Policy	DOI metadata
Type	**Required**	**Required**		
Individual Name	**Required**	**Required**		
Position	As Applicable	As Applicable		
Organizational Name	**Required**	**Required**	****	
Member Organization	**Required**	**Required**	****	
Email Address	As Applicable	As Applicable		

Digital Object Identifier (DOI)

A Digital Object Identifier (DOI) is a globally unique, persistent, and resolvable identifier used to uniquely identify objects and are widely used to identify academic, professional, and government information (e.g., journal articles, research reports, data sets, official publications). Think of it as a Social Security Number for your data. DOIs are standardized by the International Organization of Standards (ISO). DOIs are connected to the asset in perpetuity through a DOI hosting service (e.g., DataCite or CrossRef) that maintains the link to the resource.

DOIs should be assigned to Service-funded assets such as dataset, services, models, and reports, with the exception of research publications where journals assign the DOIs. Using DOIs promotes discovery and re-useability of the Service's work and investments in data and ensures appropriate recognition for those collecting and properly managing data assets.

For more information on DOIs, see Digital Object Identifier Handbook.

The Service **Digital Object Identifier Management Tool** enables Service personnel to assign DOIs, registered with DataCite, to Service-funded data products and other resources. This tool is used to mint (create), update, publish, administer, and search for Service DOIs. DOI required metadata includes the asset title, creator(s), publication date, type of data product, abstract, dates relevant to the resource, and an online link to the permanent repository location of resource and can be updated at any time.

 Figure 1: Anatomy of a DOI URL

Figure 1 from Alaska Region Interim Data Management User Guide

Once minted, the DOI is included as an identifier in your metadata record (Figure 2)

This Tool was developed and is managed by the United States Geological Survey (USGS) Science Analytics and Synthesis (SAS) Science Data Management Branch, under an interagency agreement with the Service.

DOIs generated by this tool should be assigned to Service-funded data products (such as data releases, services, models, and reports), with the exception of primary research publications published in one of the Service's journals which are assigned through a process governed by the National Conservation Training Center. To generate data product DOIs, you need to submit brief citation metadata, including the title, creator(s), publication date, type of data product, abstract, dates relevant to the data, and an online link to the data. These citation metadata can be updated at any time.

Before you being, collect required metadata information as follows:

Metadata	Required?
Title	Required
Resource Type	Required
Point of Contact	Required
Date	Required
Abstract	Required
Repository URL	Required

Creating and maintaining a DOI

The DOI Tool is designed to be user friendly and guide you through the process to mint, populate metadata, publish, and administer DOIs. It is important to note that there is both a “beta” and “live” version of the DOI. The beta version is useful as a training resource to become familiar with the DOI Tool.. The live version is where you go to actually create a DOI, which can be set to hidden or public. DOIs assigned through the live version have a prefix of 10.7944.

To login to the DOI Tool:

1. Use your Service email address and password. Once logged in, you will have “read-only” access to any record, “write” access to records that you created and to those where you have been added as a “Manager”.

Minting a DOI

Minting a DOI creates and reserves a DOI and DOI URL and does NOT require fully populated metadata fields. The benefit to minting the DOI early, such as in the Planning or Access Phase of the data lifecycle is efficiency. The DOI can be referencing in related documentation, metadata, and other elements of the project, reducing the need for updating later.

To mint a DOI, follow these steps:

1. Enter our existing metadata into the DOI Tool following the instructions provided on the site. New users are encouraged to review the “NEW USER?” section in the login page (Figure 1). The DOI does not need to be published publicly until the DOI metadata is completed.

 New User Instructions on the Login Page

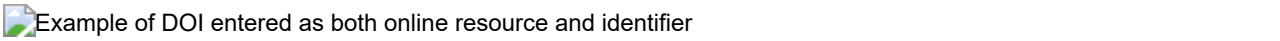
The DOI is comprised of the resolvable service url, the registered prefix and a product identifier suffix (Figure 2). Service DOI are assigned the prefix of **10.7964.** The DOI URL can be used as a weblink to the registered asset.

1. Once created, the DOI is ready for use asset related metadata, reports, publications, and other elements that need to refer to DOIs as soon as necessary.
2. During the maintain phase of the data lifecycle, any empty fields in the DOI metadata should be updated.
3. Once the fields in the DOI metadata are fully populated, publish the DOI. This creates the digital tether to the URL for the data resource landing page.
4. You can administer the DOI at any time using the DOI tools dashboard(s). See the DOI Administration section below for more information.

5. Include the DOI as an identifier in your metadata record (Figure 2b). As an identifier, only the prefix and suffix are needed.
6. Include the DOI as an online resource in your metadata record (Figure 2c). In this case the entire DOI url is needed.


INCORRECT DOI entry as identifier in metadata


CORRECT DOI entry as identifier in metadata


Example of DOI entered as both online resource and identifier

DOI Administration

The Service has secured a large, yet limited bank (range) of DOIs. Once minted, the DOI is valid in perpetuity. If you are new to the DOI, please get familiar with the tool in the training beta version. When ready to officially reserve a DOI, use the live version of the tool. The DOI tool was not intended to be used do not for data assets that were not initiated, funded, or delivered as part of a Service project.

To date the Service has not identified a responsible party or governance for administering DOIs within the Service. As a result, the duties of DOI administration must fall to the collective of Service DOI creators/editors. DOI administration duties include:

Ensuring minted DOIs are being used for their intended purpose, which includes:

- Minimizing the number of DOIs being minted and never published,
  - Ensuring one DOI per digital object (e.g. research reports, data sets, service, etc.)
  - Ensuring URL paths are still resolvable (no broken web links attached to the DOI)
- Providing usage reports
- Helping to reconcile previous DOIs from other DOI services
- Enhancing supplemental DOI metadata

Each Service program, currently without enterprise level governance, has the option to administer the assignment of DOIs to their data assets within their program such that it meets their workflow. While the tool is available for any Service employee to login and create a DOI, a program may prefer to have a process to trigger a review or notification before a DOI is created. For example, an employee may login and create a DOI during planning set the DOI to hidden until the data and set edit rights to other accountable data staff. Once completed and approved, the DOI status can be set to public.


Example of DOI Tool Dashboard

Bulk DOI Creation and Updates API

This tool also has an optional Web API (application programming interface) component for the automated creation and editing of DOIs and may be useful for bulk creation of DOIs through scripting/programming. After logging into the tool with your Department of Interior Active Directory credentials, see the DOI API link for more information.


DOI API tool link indicated with red arrow

Project Entry Guidance

The Project Entry Guidance section will cover how to create a metadata record for an SA project.

Before You Begin

Adjust your mdEditor Settings:

Metadata Repositories: Make sure your default settings are correct for the SA Science Catalog and data.gov. See Settings.

Parent Identifier: In the publishing settings, enter your regional's SA ScienceBase project folder's identifier in the "Default Parent Identifier" field.

Select the Project Profile:

After creating your project record initially and before you begin adding metadata, select **Project** from the **Profile** drop-down in the main menu. This will limit the number of available tabs and only show tabs that contain fields that are applicable to project metadata.

 After selecting the Project profile, only the relevant tabs will be displayed.

Make sure your contacts are loaded into mdEditor:

In mdEditor, contacts are created separately from individual records and then stored within a library in mdEditor. Once contacts have been entered or imported into mdEditor, they can be used in any metadata records.

To reduce unnecessary duplication of contacts, SA has a "seed list" of contacts that include government agencies and partners that are often affiliated with USFWS projects and products.

Insert LINK HERE TO SEED LIST.

> You should maintain a single list of your contacts. Having duplicate copies of the same contact is not desirable. It can create confusion as you edit and manage your metadata records and introduce unnecessary errors.

Edit a Project

1. Import or create your project record (see workflow).
2. Pick "project" as the **Resource Type**
3. Select the Project Profile: from the Main Menu (Top Navigation Bar) select "**Project"** from the profile drop-down menu.
4. Fill out metadata information for the following tabs:
    - Main Tab
    - Metadata Tab
    - Keywords Tab
    - Taxonomy Tab

    - Extent Tab
    - Documents Tab
    - Funding Tab
5. If applicable, associate your project with other metadata records.

Required Fields for Projects

Main Tab

- Title
- Status
- Language
- Resource Type
- Point of Contact
- Main Citation
    - Title
    - Identifier
    - Responsible Parties
    - Date
    - Online Resource URI
- Description
    - Abstract
- Time Period
    - Start Date
    - End Date

Metadata Tab

- Metadata Status
- Last Update Date
- Metadata Contacts
- Metadata Identifier
- Parent Metadata
    - Title
    - Identifier
    - Namespace
- Metadata Repositories

Keywords Tab

- ISO Topic Category
- SA Priority Area Category
- SA Science Category
- Conservation Action Open Standard
- Anticipated Deliverables (Best Practice)
- GCMD Keywords (Best Practice)

Taxonomy Tab

- Taxonomic classifications

Extent Tab

- Geographic Extent

Funding Tab

- Allocation
  - AwardID
  - Amount
  - Currency
  - Source
  - Recipient
  - Other Contacts\Administrator
  - Matching Funds
- Time Period
  - Fiscal Year

Main Tab: Project

The **Main** tab allows for the creation and/or editing of primary metadata.

Quick Reference: Project Main Tab	Required?
Basic Information: Title, Status	Required
Resource Type	Required
Point of Contact	Required
Citation: Title, Dates, Responsible Parties, Online Resource, Identifier	Required
Description: Abstract	Required
Time Period	Required

Basic Information

Record ID

Record ID will be auto-generated. It can be edited but it should only be edited if absolutely necessary (and ideally edited as soon as the record is created in mdEditor).

Title

Enter a concise, yet informative title. Good titles, when they appear in a search, will be understood and traceable.

Status

The **Status** drop-down menu allows you to select the status of your project. Choose status ONLY from the four following options: *completed, ongoing, proposed, or accepted.*

Default Locale

Default Locale allows for the selection of **Language**, **Character Set**, and **Country**. English, UTF-8, and USA will be selected by default, but you may change them if necessary. See Settings for instruction.

Resource Types

For projects, the Resource Type should be automatically filled in with the resource type you selected when you created your record. This should be "project" for all SA projects. Name is optional - you can leave this blank or enter a shorten project name.

Point of Contacts

Adding a point of contact gives users information on who to contact should they have a question regarding your project or product.

> To add contacts to a metadata record, you must first create/upload the contacts into mdEditor. See the Contact Section for more information.

Role	Contact	Required?
pointOfContact	FWS Science Applications National Data Steward	Required
pointOfContact	Data Steward	Required
principalInvestigator	The Project PI and/or producer	Required, if applicable
custodian	Data Custodian	Required, if applicable
owner	Data Trustee	Required
administrator	Project officer, if not the steward	Required
administrator	FWS Region (legacy and DOI Unified), FWS Program	Required
collaborator	partnership organizations and/or programs	Required, if applicable

 Example Points of Contact Entry in mdEditor.png>)

> The FWS Science Applications National Data Steward will serve as the long term contact/backup. This way, users have a point-of-contact even if there is a positional change within an organization. Regional Data Steward should be included in addition as a point of contact if available.

Citation

The **Citation** describes pertinent information about your project such as: responsible parties, internal and ScienceBase identifiers, and any online resources that may relate to your item. The citation much like a peer-reviewed publication citation, provides credit and services as a reference citation. Adding information in the citation will also improve users' ability to find your items.

Citation Required Fields

Title

The citation title is automatically populated with the title of your record.

Alternate Title

You can add an alternate title if desired - generally these should be shorter than the full Title.

Dates

Enter *acquisition, creation, updated, revision* from the picklist and then enter the date. At least one date of these date types is required.

Responsible Parties

Responsible parties must include the principal investigator of the project, but may optionally include other responsible parties such as funders (your region and program), partners, collaborators, and contributors. Collaborators could be intellectual participants while contributors could be intellectual and financial participants.

To add contacts to a metadata record, you must first create/upload the contacts in mdEditor. See the Contacts section for more information.

Role	Contact	Required?
principalInvestigator	The Project PI	Required
coPrincipalInvestigator	co investigators	Required, if applicable

Online Resource

Enter the Name and URL for the project homepage website, if available.

Identifier

You may enter as many identifiers as desired. The identifier for the repository is required here. If you have other internal IDs for projects, enter them here. Other optional identifiers for projects include: Archive Folder Name.

Best Practice: Create and use internal identifiers that are unique within your region or program for projects and their products. Example: GNLCC2010-11.

If your item does not have a ScienceBase ID yet, ScienceBase will create one automatically upon publishing. If you imported your item from ScienceBase originally, then the SBID will already be included in Metadata/Metadata Identifier and you do not need to include it here. Note that if you edit an item that is already on ScienceBase without using its existing ID, a duplicate item will be created on ScienceBase. Consult the Publish section of this manual to learn more.

Example Citation in mdEditor.png>)

Description

Description allows for the addition of the **Abstract** as well as a Short Abstract, and Supplemental Information.

Abstract

Enter an abstract that succinctly describes the project's purpose and goals. Include key species or habitats as well.

> Tip: Write your project abstract in the present tense if the project is in progress and past tense if the project has been completed.

Short Abstract

Enter a short description, limited to 300 characters, if desired. By default, mdEditor will fill the short abstract with the first 300 characters of the abstract. Best practice is a public outreach abstract for pubic affairs purposes.

Purpose

Enter a short narrative about the purpose of the resource such as the issue or problem that the resource is designed to address and anticipated results or benefits. This aligns with SA Internal Tracking metadata.

Supplemental Information

Enter comments, if desired.

Example Abstract entry in mdEditor

Time Period

Time Period refers to project start and end date.

> This set of dates is distinct from the fiscal year of funding. Here you want to indicate the overall project start and end dates. In the Funding section you will specify the fiscal years that funds were allocated.

For each project, add a Start Date and End Date. If the project spanned a single fiscal year, you can use the “Pick a Fiscal Year” dropdown to autofill the date fields.

Example Project Start and End Dates entry in mdEditor

Metadata Tab: Project

The Metadata tab describes your project's metadata, including a description that outlines the process of metadata creation, contributors to the creation of the metadata, and metadata repositories.

Quick Reference: Project Metadata Tab	Required?
Basic Information: Metadata Status, Dates	Required
Metadata Contacts	Required
Metadata Identifier	Required
Parent Metadata	Required
Metadata Repositories	Required

Basic Information

Metadata Status

Select the appropriate status of the creation of your metadata from the drop down menu. For example, if you have added all of your metadata, select *"completed."* If you still have metadata to add, select *"onGoing."*

Dates

Add at least one date is required. Recommended are "creation" (when you first created your metadata) and "lastUpdate" (when you updated metadata after initial publication).

Metadata Contacts

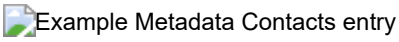
Metadata Contacts are required. Adding a metadata contact will give users a contact point should they have any questions about the metadata. __

Role	Contact	Required?
author	See notes below	At least one is required
publisher	default is USFWS	Required
pointOfContact	SA Data Steward	Required

Metadata Contact Notes:

- The author should be an individual and can be a generic data manager.
- In most cases, the author will be the data manager, but could be anyone, including someone outside of FWS (e.g., imported FGDC metadata can list the original author).
- Publisher can also include the FWS region and/or program.

- The point of contact should be a regional or national data steward.

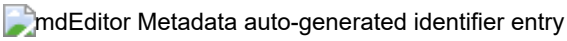

Example Metadata Contacts entry

Metadata Identifier

The **Metadata Identifier** is automatically populated by mdEditor. The metadata identifier gives each of your projects and products a unique ID and differentiates them from other similar projects and products. Digital Object Identifiers are not needed for Projects.

- If the record was imported from ScienceBase, the Metadata Identifier will be auto-populated with the ScienceBase ID (SBID).
- If the record was created in mdEditor, it will generate a universally unique identifier (UUID).

> Once a Metadata Identifier is created in the metadata, do not change it. mdEditor uses the Metadata Identifier to connect records and changing the Metadata Identifier can break those connections. If there are additional identifiers you want to include in your metadata record, include them in Main/Citation/Identifier.


mdEditor Metadata auto-generated identifier entry

Parent Metadata

Parent Metadata tells mdEditor where the project metadata should go when it is published. If using ScienceBase, this is the folder above the project by default.

If you imported the project metadata from ScienceBase originally, this section will be populated already.

If you created the project metadata from scratch in mdEditor, this will be blank. If you provide a default parent ID in Settings (Publishing Settings for ScienceBase), this will be generated for you when when you publish. This is most likely your SA regional project folder. You can enter the parent item SBID directly in your individual metadata record if you wish.

Parent Metadata Required Fields:

Title (Required)

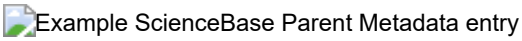
If this is not already populated, you can enter something like "Parent folder."

Identifier and namespace (Required)

Defines the location of the parent folder in ScienceBase.

Identifier	Namespace
ScienceBase identifier for the parent item	scienceBase

The ScienceBase identifier is the alphanumeric string in the item's URL immediately following **"item/".** For example, **59b97600e4b091459a54d9f3c** is the SBID for the item at the URL: https://www.sciencebase.gov/catalog/item/59b97600e4b091459a54d9f3c


Example ScienceBase Parent Metadata entry

Metadata Repositories

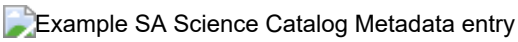
Metadata Repositories indicate where the metadata will be sent upon publishing.

SA Science Catalog

For projects that should be listed in the SA Science Catalog: Select *"ScienceCatalog"* from the repository list. *"SA Science Catalog"* should automatically show up as the collection title. If the collection title does not appear, stop and enter the correct information in Settings. Then select the repository for your project. Projects without the correct tag and collection title will not show up in the Science Catalog.

The Metadata Repository and Collection Title must be exactly the same for each of your records with no variations in spelling, spaces, capitalization, etc. Specifying this information in Settings is the best way to ensure the repository information will be consistent across all of your records. It strongly recommended that you do not type these in by hand on individual metadata records.

You should only use the data.gov repository for data products such as datasets, GIS data, etc. Data.gov does not include reports, presentations, or other documents nor are projects sent to data.gov.


Example SA Science Catalog Metadata entry

Keywords Tab: Project

Adding keywords to your metadata record allows for the record to be found later through a search engine, keywords are the way to tag your projects or products. mdEditor is designed using existing thesauruses that contain pre-determined keywords.

Quick Reference: Project Keywords Tab	Required?
ISO Topic Category	Required
SA Priority Category	Required
Science Topic Category	Required
Conservation Action Open Standard	Required, if applicable
Strategic Habitat Conservation Component	Required, if applicable
GCMD Keywords	Best Practice
Shared Priority Keywords	Best Practice

Add Keywords to your Project

1. Click “+ Add Thesaurus” on the right to add the different thesauruses.
2. Add keywords from the following pre-populated thesauruses.
3. If none of the keywords in the following categories are sufficient for tagging your project, you can add other keywords with a custom thesaurus (see below for more information).

SA Project Required Keywords

ISO Topic Category (Required)

Because mdJSON metadata is based on the ISO (International Organization for Standardization) metadata standard, all LCC projects must select at least one ISO Topic Category. ISO topics were generally meant for spatial data so they might be a bit of a stretch, bu do your best to find the best fit. mdEditor provides definitions of each ISO topic category if you hover over the ? icon.

Choose all that apply. The ISO Topic list is as follows:

1. biota
2. boundaries
3. climatologyMeteorologyAtmosphere
4. economy
5. elevation
6. environment
7. geoscientificInformation
8. health

9. imageryBaseMapsEarthCover
10. intelligenceMilitary
11. inlandWaters
12. location
13. oceans
14. planningCadastre
15. society
16. structure
17. transportation
18. utilitiesCommunication

> Tip: Biota and environment are probably the best fit for most LCC projects.

SA Priority Area (Required)

Choose all that apply. The list of options includes the following:

1. Collaborative Partnerships
2. Landscape Conservation
3. At-risk Species
4. Data Management
5. Conservation Science Support
6. Climate Change
7. Social Science
8. Workforce Culture
9. Organization Operations and Standards
10. Communications

Science Topic (Required)

Choose all that apply. The list of options includes the following:

1. Climate Adaptation
2. Climate Mitigation
3. Climate Resiliency
4. Carbon Sequestration
5. Indigenous Knowledge
6. Decision Support
7. Biotechnology
8. Species Status Assessment Support
9. Genetics and eDNA
10. Habitat Connectivity
11. Wildlife Corridors
12. Diversity and Inclusion
13. Working Lands
14. Pollinators
15. Strategic Habitat Conservation

16. Landscape Conservation Design
17. Vulnerability Assessment
18. Ecosystem Services
19. Wildlife Health and Disease
20. Environmental Justice
21. Stakeholder Engagement
22. Human Dimensions
23. Policy
24. Economics

Conservation Action Open Standard (Required, if applicable)

The Open Standards for the Practice of Conservation is a globally utilized nomenclature for conservation. Including these keywords helps to align the work of USFWS Science Applications with global conservation efforts and to utilize the shared resources of the Conservation Standards Network. The open standards keywords for conservation actions are as listed:

Land / Water Management (1.0)
Site/Area Stewardship (1.1)
Ecosystem & natural process (re)creation (1.2)
Species Management (2.0)
Species stewardship (2.1)
Species re-introduction & translocation (2.2)
Ex-situ conservation (2.3)
Awareness Raising (3)
Outreach & communications (3.1)
Protests & Civil Disobedience (3.2)
Law Enforcement and Protection (4.0)
Detection & Arrest (4.1)
Criminal Prosecution & Conviction (4.2)
Non-Criminal Legal Action (4.3)
Livelihood, Economic, and Moral Incentives (5)
Linked enterprises & alternative livelihoods (5.1)
Better products & management practices (5.2)
Market-base incentives (5.3)
Direct economic incentives (5.4)
Non-monetary values (5.5)
Conservation Designation and Planning (6)
Protected area designation or acquisition (6.1)
Easements & Resource rights (6.2)
Land/Water use zoning & designation (6.3)
Conservation planning (6.4)
Site Infrastructure (6.5)
Legal & Policy Frameworks (7)
Laws, regulations, & codes (7.1)

Land / Water Management (1.0)
Policies & guidelines (7.2)
Research and Monitoring (8)
Basic research & Status monitoring (8.1)
Evaluation, effectiveness measures & learning (8.2)
Education and Training (9)
Formal education (9.1)
Training & individual capacity development (9.2)
Institutional Development (10)
Internal organizational management & administration (10.1)
External organizational development & support (10.2)
Alliance & partnership development (10.3)
Financing conservation (10.4)

GCMD Keywords (Best Practice)

GCMD stands for Global Change Master Directory and these keywords are maintained by NASA. Look for useful keywords in the GCMD Science Keywords. There are GCMD Platforms and Instruments Keywords but they are unlikely to apply to LCCs.

> Best Practice: Check the "Full Path" checkbox to save the full path of the keyword to your metadata. This will maintain the category and context of the specific keywords chosen.

Custom Thesaurus

If any of your desired keywords do not appear in the existing thesauruses, you can add them via the custom thesaurus. Use a custom thesaurus only for keywords that are not available in an existing thesaurus.

You cannot add keywords to an existing thesaurus; you can only add keywords in a custom thesaurus. If a region or program finds the need for the additional of keywords to an existing thesaurus or the need for another thesaurus, please contact the FWS SA National Data Steward.

> You cannot save a custom thesaurus in mdEditor.

Tip: If you have a consistent set of keywords that you use across your projects, you could add these to a "template project" record in mdEditor and then modify the specific keywords you need for each project. See the workflow section for more info about using template records.

Keywords and ScienceBase Tags

Keywords vs. Tags

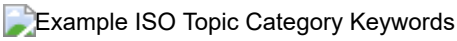
mdEditor uses the term "keywords" while ScienceBase uses the term "tags."

Keywords edited in mdEditor will not overwrite keywords stored in sbJSON on ScienceBase because ScienceBase only adds to the list of tags. If you want to remove obsolete keywords/tags on ScienceBase, you will need to manually delete them in ScienceBase. mdJSON and the SA Science Catalog, however, will reflect the changes made in mdEditor.

Imported Keywords

If you imported your project metadata from ScienceBase, then the ScienceBase keywords are included in a custom thesaurus.

If your LCC already has a controlled vocab list in ScienceBase, unfortunately it cannot connect to mdEditor. The selected keywords for any specific record will import into mdEditor, but the saved list will not be.


Example ISO Topic Category Keywords

Taxonomy Tab: Project

Taxonomy is required for projects and strongly recommended for products (where applicable).

Quick Reference: Project Taxonomy Tab	Required?
Taxonomy	Required, if Applicable

Taxonomy

mdEditor's new “Taxonomy” section automatically pulls in taxonomic information from ITIS (Integrated Taxonomic Information System – see itis.gov for more information).

> Please note that this functionality in mdEditor is not intended to explore ITIS. It is a tool to add known taxonomic information to your metadata. If you want to explore ITIS, go to itis.gov to find information and then come back to mdEditor with the desired search values.

The minimum requirements for valid taxonomy are a Taxonomic System plus one or more taxonomic classifications.

Add Taxonomic System

(1) Click "Add Collection"

(2) From here, you can click "Add Taxa from ITIS" directly (on right side) without adding the taxonomic system. This will be filled in for you automatically once you have added items from ITIS.

(3) Enter your search terms in the search box. You can type in a common name, scientific name, or TSN (Taxonomic Serial Number, assigned by ITIS). You can type in any level of taxonomy, not just species name (e.g., you can type in an order or class or genus). You can specify by Kingdom if you like.

> If you haven’t used the search in a while (or ever) the ITIS service might be asleep so it will take a few more seconds to load but then will load quickly after that.

> The status of the taxonomic classification is denoted in () after the TSN. ITIS may consider a classification "invalid" if the species was reclassified, for example. It is up to you whether you want to add invalid ITIS classifications to your metadata.

(4) Click "Add" for the search results you want to add to your record and then click "Import Taxa." You will get a message of successful import at the bottom of your screen.

> You don't need to worry about clicking import multiple times for the same species. mdEditor is smart enough to know not to create duplicate entries of the same species.

(5) Click "Back to Collection." You will see that it has added a taxonomic hierarchy. It has also added a Title to Taxonomic System (if you hadn't already added one by hand). This complete the the minimum information required for taxonomy.

> You can click on any level of the taxonomic hierarchy to collapse the entries below that level.

> mdEditor only adds common names at the lowest taxonomic level you identified (e.g., species level).

(6) You can add additional information regarding the taxonomic information if you desire.

Observers would be filled out when there were people who actually went in the field/lab and identified species. Here you would lie the people who did that work.

- General Scope: You can add a description of the range of taxa addressed in the dataset or collection.
- Identification Procedure: You can describe the methods used for taxonomic identification.
- Identification Completeness: You can add information regarding completeness and uncertainty in the identifications.

Voucher is where you can add information about specimens you submitted to a museum or a storage facility where you are storing specimens, can document that here (select a Repository via a Contact entered in mdEditor).

When Taxonomy is Needed

Taxonomy is mostly used for search is discovery and functions similar to keywords.

> If you have existing species names or other keywords, you do not need to delete those. Taxonomy is entered in a separate section in mdJSON so they are separate from Keywords.

To some extent, this is up to the judgement of the data manager. You will know best the connection of a resource to a specific species or other taxonomic group. For example, if a bear model was used to rank habitat for a prioritization product but the final output is not relevant to bears any longer, then you probably wouldn't want to add bear species in taxonomy.

Reporting Issues

If you encounter issues or bugs using the new Taxonomy feature, please report them in this github thread: https://github.com/adiwg/mdEditor/issues/101 (requires github account to post).

Extent Tab: Project

Extent refers to geographic boundaries for your project. Spatial extents lets users see at a glance the geographic footprint of your project and allows searching within specific geographic areas.

Quick Reference: Project Extent Tab	Required?
Extent	Required

Creating Extents

There are multiple ways to create a spatial extent for your project.

Clicking the **Edit Extent Features** button allows for the addition of **Feature Properties** such as: **ID**, **Name**, or **Description**. You can draw a polygon or a bounding box in the initial window.

You can export spatial extents and re-use for other records using the **import feature** button or by dragging and dropping onto the map.

Extents are limited to 5000 vertices. Recommend you create only simple polygons or bounding boxes. If you want greater detail, attach high-definition shapefiles instead of trying to draw them.

Extents should be accurate enough for searching purposes, but remember that they are metadata, not data.

Option 1: Import Spatial Features

Spatial features such as geoJSON, shapefiles, and kml can be imported. However, file attributes (such as name and description), will not be imported and must be added manually.

For projects without a specific extent, you can use the FWS regional geography. Projects should have custom extents when it is relevant to the scope of the project. Remember, these extents will be used for search and discovery purposes. geoJSON files for all FWS regional and state geographies are available on ScienceBase (private DMWG folder that requires ScienceBase login). Download the relevant files and then import into mdEditor.

> Important: coordinates used must be geographic coordinates, not projected coordinates.

Option 2: Draw Spatial Features

> Tip: It is easier to click "finish" when drawing a polygon instead of trying to close the polygon by clicking on the first point.

Option 3: Draw Bounding Box

> mdEditor can automatically calculate a bounding box if you have at least one extent in the metadata.


Example Geographic Extent entry

Bounding boxes will not work across the dateline but you can have more than one extent per project. If your project area crosses the dateline, split the area into multiple extents and create separate bounding boxes.

Saving and Exporting Extents

Tip: You can export, save, and import an extent to use for other projects or products.

Documents Tab: Project

The **Documents** tab is where you can add references to resources that *relate* to your project but do not *define* or *describe* the project. These can include videos, webinars, books, posters, web pages, news releases, etc. This should not include links to the project or its products. An example document could be a report for a workshop that inspired the project.

There are no specific requirements or best practices for documents.

> ScienceBase has a similar section called "weblinks." These will be populated in the Documents section if sbJSON is imported into mdEditor.

For more information, consult the Documents section of the mdEditor manual.

Funding Tab: Project

Tracking funding in the metadata allows for identification of funding sources and recipients, enables comparisons, and aggregations across all regions.

Quick Reference: Project Funding Tab	Required?
Allocation, including Award ID and Amount	Required
Funding Source	Required
Funding Recipient Organization	Required
Funding Administrator	Required
FWS sub-activity and funding codes	Best Practice
Funding agreement type	Best Practice
Matching Funds, including above	Best Practice
Time Period (fiscal year of allocation)	Required

Funding Allocations

Allocations describe where project funding came from, how much, where and when it was distributed. Science Catalog users can search by specific fiscal year, funders, or recipients.

A funding allocation represents a single fiscal year, source, and recipient.

> If you have two recipients in a single fiscal year, each needs to be added as separate funding allocations.

Required Fields

For each funding allocation, the following fields should be filled out.

Award ID (Required)

The Award ID numbers are internal codes that connect the distribution forms to the project metadata. Award IDs include grant or cooperative agreement numbers, contract numbers, or inter-agency agreement numbers. Inclusion of Award IDs provides accountability and allows tracking and auditing between financial systems and the Science Catalog.

If no Award ID exists, then the project is likely an internal effort. Enter '*None*" in the Award ID field. This allows for tracking and search of internally funded projects.

Amount (Required)

Enter the amount of funding. Be sure U.S. Dollars is selected (ie. Unites States of America, the--US Dollar; this is third from the bottom of USD options in mdEditor).

Source (Required)

Add the relevant contact for the “source” of the project funding. Source should be an organization, not an individual. For SA projects, the most common sources are U.S. Fish and Wildlife Service, Bureau of Land Management, and Bureau of Reclamation.

> Funding source should always identify the agency or organization, rather than a sub-program or office. For example, all funding from other FWS programs need to list U.S. Fish and Wildlife Service as the source (and not list the source as Fisheries, specific Refuges, ES, etc.). Clarifications on the exact program or office where the funding came from should be done through the Funding/Other Contacts field.

Recipient (Required)

Add the relevant contact for the “recipient” of the project funding. Recipient should always be an organization, not an individual. For example, the Principal Investigator would not be listed as the recipient, but their organization would be. If there are multiple recipients for a project, they need to be added as separate allocations.

You could add the Principal Investigator in the Other Contacts field as "principalInvestigator."

Other Contacts (Required)

In most cases, a program or region has allocated the funding for a project. In order to track funds within regions and programs and provide proper credit, add the FWS region (yes, both the legacy region and the DOI unified region for now) as the funding "administrator" for all allocations. Recall that the funding source should identify the agency who supplied the funding (i.e. US Fish and Wildlife Service). Also, add the program name, if applicable, as the funding "administrator".

> Funding administrator can also be used to differentiate funding from different programs/offices within the same agency. For example, the U.S. Fish and Wildlife Service can be identified as the funding source and the funding administrator may also include "Ecological Services" or a specific field office.

Marked Funding

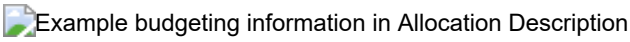
In some cases, funds are marked for specific activities and include reporting requirements that accompany the funding allocations. For example, EPA allocates Great Lakes Restoration Initiative (GLRI) funds on behalf of Congress to FWS, among others. FWS then distributes the funds across programs for use. The Gulf Coast Restore funds are a similar case. This funding flow can be tracked and aggregated with the Funding Other Contacts. Add the Name of the funding source as an organization contact and add the funding source as the "*funder*" in Funding Other Contacts.

 Example of organizational fund contact entry

 Example of organizational fund entry in Funding metadata entry

FWS sub-activity, funding codes, agreement type (Best Practice)

In order to better integrate budgeting records and align with activity tracking priorities, add the FWS sub-activity code and funding code in the Allocation comments. Also add the funding For example, the text entry may look like this: FWS sub-activity 1420, fundcode 190, contract. If funds are provided from multiple sub-activities, please add this in the description (i.e. FWS sub-activity 1430, fundcode 170, $30,000: sub-activity 1420, fundcode 170, $10,000). At some point in the future, mdEditor may include additional fields for these values.


Example budgeting information in Allocation Description

Matching and In-kind Funds

Project funds or in-kind support that were supplied by a partner (i.e., not specifically allocated to SA) should be included as an allocation as described above, but with the matching fund box checked. Each matching fund provider needs to be included as a separate allocation.


Example of Matching Allocation Metadata entry

Time Period

Dates (Required)

For each allocation, enter the fiscal year that funds were awarded (not the time span of the entire project). There should be a single fiscal year for each allocation. Adding a time period lets users know when your items were funded, and lets them find your item when searching for items funded in a similar time period.

> Use the “Pick a Fiscal Year” dropdown to autofill the date fields.

Example of multiple allocations across several fiscal years for a single project record.

Associating Records: Project

The **Associated** section is used to connect metadata records with each other. This feature should be used when items are related, for example, products are often the result of projects, and projects often have sub-projects. Projects and Products can be linked together by using association. Adding associations gives users the ability to find items that relate to each other in the Science Catalog.

> In ScienceBase, **Associated Records** are referred to as **Item Associations**.

> Remember: Project-product associations are different than parent-child relationships on ScienceBase.

Create Associations

In mdEditor, associations can be created from the Project record or the Product record. The "Association Type" will define the association from your current record to the linked record. Specifying the "Linked Association Type" will create the association from the other direction.

> Important: It is recommended you ALWAYS specify the Linked Association Type when you create associations. This will ensure the associations are defined from both directions and be present in the metadata no matter how the metadata is translated or where it is used in the future.

If you import records from ScienceBase, the record associations might be automatically created, but sometimes associations may need to be created manually (as described below). Associations can only be made after both project and product records have been created or imported into mdEditor.

Quick Reference: Creating an Association in a Project Record
1. Select "**product**" from the Association Type drop-down menu.
2. Use the *Select a Record* button to select an associated product.
3. Choose the product that you would like to associate from the "Select a Resource" list.
4. Fill out the Linked Association Type with "**parentProject**."

Step-by-Step: Creating an Association in a Project Record

Step 1: Select "**product**" from the **Association Type** drop-down menu. This field will describe the relationship from the associated record to the project record (the associated record is the product of the project record you are editing).

Step 2: Click the "**Select a Record**" button to select an associated product.

Step 3: Choose the product that you would like to associate from the **Select a Resource** list.

Step 4: Fill out the Linked Association Type with "**parentProject**."

Product Entry Guidance

The Product Entry Guidance section will cover how to create a metadata record for a product. A product can be anything from a document or presentation or website to a dataset or programming code. mdEditor offers an extensive list of product options, of which "*product*" should never be used.

Before You Begin

Adjust your mdEditor Settings:

Metadata Repositories: Make sure your default settings are correct for the SA Science Catalog and data.gov. See Settings.

Parent Identifier: In the publishing settings, enter your SA regional ScienceBase project folder's identifier in the "Default Parent Identifier" field.

Select the Product Profile:

After creating your product record initially and before you begin adding metadata, select **Product** from the **Profile** drop down in the main menu. This will limit the number of available tabs and only show tabs that contain fields that are required for product creation.

 Select the Product profile in the Profile dropdown in the top ribbon

Make sure your contacts are loaded into mdEditor:

In mdEditor, contacts are created separately from individual records, and then stored within a library in mdEditor. Once contacts have been entered or imported into mdEditor, they can be used in metadata records. SA maintains a 'seed' list of contacts that can be found in the SA ScienceBase community item page.

Edit a Product

1. Import or create your product record (see workflow).
2. Choose the specific **Resource Type** that describes your product. Do not choose the generic "product."
3. Select the Product Profile: from the Main Menu (Top Navigation Bar) select "**Product"** from the profile drop-down menu.
4. Fill out metadata information for the following tabs:
    - Main Tab: Product
    - Metadata Tab: Product
    - Keywords Tab: Product
    - Taxonomy Tab: Product
    - Extent Tab: Product
    - Lineage Tab: Product
    - Distribution Tab: Product
    - Constraints Tab: Product
    - Dictionaries Tab: Product
    - Documents Tab: Product

5. If applicable, associate your products with other metadata records.

Required Fields for Products

Main Tab

- Title
- Status
- Language
- Resource Type
- Point of Contact
- Main Citation
  - Title
  - Identifier
  - Responsible Parties
  - Online Resource URI
- Description
  - Abstract
- Time Period
  - Start Date
  - End Date

Metadata Tab

- Metadata Status
- Date
- Metadata Contacts
- Metadata Identifier
- Parent Metadata
  - Title
  - Identifier
  - Namespace
- Metadata Repositories
- Online Resource

Extent Tab

- Geographic Extent

Keywords Tab

- ISO Topic Category
- SA Priority Area Category
- SA Science Category
- Conservation Action Open Standard
- GCMD Keywords (Best Practice)

Taxonomy Tab

- Taxonomic classifications

Extent Tab

- Geographic Extent

Distribution Tab

- Distributor
  - Contact
  - Role
  - Online Option
    - URI

Constraints

- Legal
  - Access Constraint

Main Tab: Product

The **Main** tab allows for the creation and/or editing of primary metadata.

Quick Reference: Product Main Tab	Required?
Basic Information: Title, Status	Required
Resource Type	Required
Point of Contact	Required
Citation: Title, Date, Responsible Parties, Online Resource	Required
Citation: Identifier	Required
Description: Abstract	Required
Time Period: Start Date, End Date	Required

Basic Information

Record ID

Will be auto-generated but can be edited.

Title

Enter as informative a title as possible. Good titles, when they appear in a search, will be understood and/or traceable.

Status

The **Status** drop-down menu allows you to select the status of your product. Choose status ONLY from the four following options: *completed*, *ongoing*, *proposed*, or *accepted*.

Default Locale

Default Locale allows for the selection of **Language**, **Character Set**, and **Country**. English, UTF-8, and USA will be selected by default, but you may change them if necessary. See Settings for instruction.

Resource Types

The Resource Type must be identified when the record is created. Products must be identified from the list of options, but 'product', while on the list, is not a valid option. After the record is initiated the field should be automatically filled in with the resource type selected when the record was created. Name is optional - you can leave this blank or enter a shorten project name.

> Products must have a specific resource type selected, NOT just "product".

Point of Contacts

Adding a point of contact gives staff information on who to contact should they have a question regarding your project or product. From the **Role** drop-down menu, select **pointOfContact**. From the **Contacts** drop-down menu, select a contact from the list of contacts. See the Contacts section for information on creating contacts.

Role	Contact	Required?
pointOfContact	FWS Science Applications National Data Steward	Required
pointOfContact	Data Steward	Required
principalInvestigator	The Project PI	Required, if applicable
custodian	Data Custodian	Required, if applicable
administrator	Data Trustee	Required
administrator	FWS Region (legacy and DOI Unified)	Required
collaborator	partnership organizations and/or programs	Required, if applicable

> The FWS Science Applications National Data Steward will serve as the long term contact/backup. This way, users have a point-of-contact even if there is a positional change within an organization. Regional Data Steward should be included in addition as a point of contact if available.

Citation

The **Citation** lets users know pertinent information about your product such as responsible parties, internal and ScienceBase identifiers, and any online resources that may relate to your item. The citation much like a peer-reviewed publication citation, provides credit and services a as reference. Adding information in the citation will also allow users to find your item when they search for items that contain said information.

The following fields are required in citation:

Title

Added automatically based on the title of your record.

Alternate Title

Add an alternate title.

Dates

Enter *acquisition*, *creation, updated*, *revision*, or *publication* date reference from the picklist and then enter the date. At least one of these date types is required.

Responsible Parties

This must include a point of contact, but may also include other responsible parties such as funders (including your LCC), partners, collaborators, and contributors. Collaborators could be intellectual participants while contributors could be intellectual and financial participants.

Role	Contact	Required?
principalInvestigator	data creator	Required
coPrincipalInvestigator	data co-creator	Best Practice

For items that will be sent to data.gov, only the first in the list of Responsible Parties (#0) will appear.

Online Resource

Enter the Name and URL for the location where users can find the product (e.g., ScienceBase page or DOI url). Data.gov refers to this online resource link to send users to the data download.

Important: The URLs to access and download products must **also** be included in the Distribution tab. Distribution Links is the only online resource that data.gov reads so without a URL there, users have no way to access the actual product from data.gov.

Identifier

You may enter as many identifiers as desired, but at least one is required. If you have internal SA specific IDs for projects, enter them here. A Digital Object Identifier (DOI) is the preferred identifier for this. The Archive Folder Name may be included here as well.

 Example of Online resource and identifier metadata entries

Digital Object Identifier can be entered both as an online resource AND an identifier. Note that the entry format is different. As an online resource, the entire url is required, however, as an identifier, only the prefix and suffix of the DOI are required (see figure above).

Best Practice: Create and use internal identifiers that are unique within your region for projects and their products. Example: GNLCC2010-11.

If your item does not have a ScienceBase ID (SBID) yet, ScienceBase will create one automatically upon publishing. If you imported your item from ScienceBase originally, then the SBID will already be included in Metadata/Metadata Identifier and you do not need to include it here. Note that if you edit an item that is already on ScienceBase without using its existing SBID, a duplicate item will be created on ScienceBase. Consult the Publish section of this manual to learn more.

If the product metadata was created by copying another mdEditor metadata record, this identifier MUST be edited/changed since it will reflect the copied record identifier. Only the mdEditor UUID changes to represent a new record when an item is copied. Consult the Copy Records section of this manual to learn how to make a copy.

Description

Description allows for the addition of the **Abstract** as well as a Short Abstract, Purpose, Supplemental Information, and an Environment Description.

Abstract

Enter an Abstract

Tip: Write your abstracts for projects in the present tense if the project is underway and past tense if it has been completed.

Short Abstract

Enter a short description, limited to 300 characters, if desired. The Best Practice here is to include a few sentences for media communications that Public Affairs may find helpful.

Supplemental Information

Enter comments, if desired.

Time Period

Time Period refers to project start and end date, or the date that the product was applicable. For example, the time when a map is valid, date of publication, date of presentation, or dates when the data was collected.

- **Required**: For each product, add a start date and end date.

Metadata Tab: Product

Record Metadata allows you to describe your record's metadata, including a description that outlines the process of metadata creation, contributors to the creation of the metadata, and repositories where the metadata should be included.

Quick Reference: Product Metadata Tab	Required?
Metadata Status	Required
Date	Required
Metadata Contacts	Required
Metadata Identifier	Required
Parent Metadata	Required
Metadata Repositories	Required

Basic Information

Metadata Status

Select the appropriate status of the creation of your metadata from the drop-down menu. For example, if you have added all of your metadata, select "**completed**." If you still have metadata to add, select "**onGoing**."

Dates

Enter a creation date or last updated date. At least one of these dates is required.

Metadata Contacts

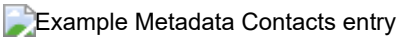
Metadata Contacts are required and selected from your list of contacts. Adding a metadata contact will give LCC staff a contact point should they have any questions about the metadata.

Role	Contact	Required?
author	See notes below	At least one is required
publisher	default is USFWS	Required
pointOfContact	SA Data Steward	Required

Metadata Contact Notes:

- The author should be an individual and can be a generic data manager.
- In most cases, the author will be the data manager, but could be anyone, including someone outside of FWS (e.g., imported FGDC metadata can list the original author).

- Publisher can also include the FWS region and/or program.
- The point of contact should be a regional or national data steward.


Example Metadata Contacts entry

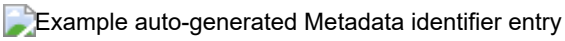

Example Contact Metadata entry

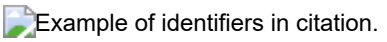
Metadata Identifier

The **Metadata Identifier** is automatically populated by mdEditor. The metadata identifier gives each of your projects and products a unique ID and differentiates them from other similar projects and products. Note this is difference from a Digital Object Identifier which is linked directly to the dataset.

- If the record was imported from ScienceBase, the Metadata Identifier will be auto-populated with the ScienceBase ID (SBID).
- If the record was created in mdEditor, it will generate a universally unique identifier (UUID).

Once a Metadata Identifier is created in the metadata, do not change it. mdEditor uses the Metadata Identifier to connect records and changing the Metadata Identifier can break those connections. If there are additional identifiers you want to include in your metadata record, include them in Main/Citation/Identifier.


Example auto-generated Metadata identifier entry


Example of identifiers in citation.

Parent Metadata

Parent Metadata defines the ScienceBase folder in which the product will be published. The parent metadata tells mdEditor where the product metadata should go when it is published to ScienceBase.

If you imported the product metadata from ScienceBase originally, this section will be populated already.

If you created the product metadata from scratch in mdEditor, you need to enter the appropriate parent item ScienceBase ID. This is most likely the folder for the project that this product originated from.

Title (Required)

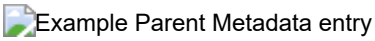
If this is not already populated, you can enter something like "Parent folder."

Identifier (Required)

Defines the location of the parent folder in ScienceBase.

Identifier	Namespace
ScienceBase identifier for the parent item	scienceBase

The ScienceBase identifier is the alphanumeric string in the item's URL immediately following **"item/"**. For example, **59b97600e4b091459a54d9f3c** is the SBID for the item at the URL: https://www.sciencebase.gov/catalog/item/59b97600e4b091459a54d9f3c


Example Parent Metadata entry

Metadata Repositories

Metadata Repositories indicate where the metadata will be sent upon publishing.

SA Science Catalog

For products that should be listed in the SA Science Catalog: Select *"ScienceCatalog"* from the repository list. *"SA Science Catalog"* should automatically show up as the collection title. If the collection title does not appear, stop and enter the correct information in Settings. Then select the repository for your project. Products without the correct tag and collection title will not show up in the Science Catalog.

data.gov

For products that should be sent to data.gov: Select "data.gov" from the repository list. The full name of your data.gov tag should automatically show up in the collection title. If the collection title does not appear, stop and enter the correct information in Settings. Then select the data.gov repository for your product. Products without the correct tag and collection title will not be sent to data.gov.

The Metadata Repository and Collection Title must be exactly the same for each of your LCC's records with no variations in spelling, spaces, capitalization, etc. Specifying this information in Settings is the best way to ensure the repository information will be consistent across all of your records. It strongly recommended that you do not type these in by hand on individual metadata records.


Example Metadata Repository entry

data.gov Guidance

Follow the guidance below for items to be sent to data.gov.

What products go into data.gov?

The information below is based on the best available information about data.gov as of April 2018. A future Department of the Interior data governance board may issue written guidance about what is appropriate for data.gov.

- Machine-readable, non-proprietary data sets are top priority (e.g., .csv, txt, etc.), including GIS files (e.g., .shp, .jpg, .tif, geotif, etc.).
- If no machine-readable version of the data exists, then proprietary data formats (e.g., .mdb, .accdb, .xlxs, FGDB, etc.) may be cataloged.
- Cataloging spatial or non-spatial data web services (OGC, WMS, WFS, etc.), ESRI (map services, feature services, hosted feature layers, image services), etc. is acceptable.
- Data (or static maps) in the form of a .pdf file is acceptable to catalog if there is no other file format of of the data.
- Data.gov is intended for data only. As such, NO publications, report documents, web pages, or presentation recordings are to be cataloged.

Avoid submitting a dataset more than once. If someone else from any organization has cataloged the identical data on data.gov, do not enter it again.

Requirements to send something to data.gov

1. Set the appropriate data.gov Metadata Repository tag.
2. List the Science Applications National Data Steward first in the list of Responsible Parties (#0). data.gov only displays the first contact and the data steward should be listed first.
3. Include a Distribution Link where the product can be accessed or downloaded.

data.doi.gov

Items actually go through an intermediary before they harvested to data.gov. All Department of the Interior items go through data.doi.gov first.

Link to DOI data.gov: https://data.doi.gov/dataset

Link to LCC Network items: https://data.doi.gov/dataset?organization=lcc-network

Link to SA items: (insert link here)

Keywords Tab: Product

Adding keywords to your metadata record allows for the record to be found later through a search engine, keywords are the way to tag your projects or products. The mdEditor is designed using thesauruses that contain pre-determined keywords. These thesauruses create a 'controlled vocabulary' so that all SA staff adding metadata can adhere to the same standards, and future search results can return clear results of projects and products.

Quick Reference: Product Keywords Tab	**Required?**
ISO Topic Category	Required
GCMD Keywords	Best Practice

To add Keywords to your Metadata Record

1. Click “+ Add Thesaurus” on the right to add the different thesauruses.
2. Add keywords from the following pre-populated thesauruses.
3. If none of the keywords in the following categories are sufficient for tagging your record, you can create a custom thesaurus (see below for more information).

Product Required Keywords

ISO Topic Category (Required)

Because mdJSON metadata is based on the ISO (International Organization for Standardization) metadata standard, all LCC projects must select at least one ISO Topic Category. ISO topics were generally meant for spatial data so they might be a bit of a stretch, but do your best to find the best fit. mdEditor provides definitions of each ISO topic category if you hover over the **?** icon.

ISO Topic List:

1. biota
2. boundaries
3. climatologyMeteorologyAtmosphere
4. economy
5. elevation
6. environment
7. geoscientificInformation
8. health
9. imageryBaseMapsEarthCover
10. intelligenceMilitary
11. inlandWaters
12. location
13. oceans
14. planningCadastre
15. society
16. structure

17. transportation
18. utilitiesCommunication

> Tip: Biota and environment are probably the best fit for most SA projects.

GCMD Keywords (Best Practice)

GCMD stands for Global Change Master Directory and these keywords are maintained by NASA. Look for useful keywords in the GCMD Science Keywords. There are GCMD Platforms and Instruments Keywords but they are unlikely to apply to SA products.

> Best Practice: Check the "Full Path" checkbox to save the full path of the keyword to your metadata. This will maintain the category and context of the specific keywords chosen.

Custom Thesaurus

If any of your desired keywords do not appear in the existing thesauruses, you can add them via the custom thesaurus. Use a custom thesaurus only for keywords that are not available in an existing thesaurus.

You cannot add keywords to an existing thesaurus; you can only add keywords in a custom thesaurus.

> You cannot save a custom thesaurus in mdEditor.

> Tip: If you have a consistent set of keywords that you use across your projects or products, you could add these to a "template project" record in mdEditor and then modify the specific keywords you need for each entry. See the workflow section for more info about using template records.

> Look for useful keywords in the GCMD Science Keywords. GCMD Science keywords are the most applicable to SA. There are GCMD Platforms and Instruments keywords, but they are unlikely to apply to SA.

Keywords and ScienceBase

Keywords vs. Tags

mdEditor uses the term "keywords" while ScienceBase uses the term "tags."

Keywords edited in mdEditor will not overwrite keywords stored in ScienceBase (i.e. sbJSON) because ScienceBase only adds to the list of tags. If you do not want obsolete keywords/tags to show up on ScienceBase, manually delete these in ScienceBase. mdJSON and the SA Science Catalog, however, will reflect any changes made in mdEditor.

Imported Keywords

If you imported your product metadata from ScienceBase, then the ScienceBase tags are each created as a keyword in a custom thesaurus.

Controlled vocab list in ScienceBase cannot connect to mdEditor. The selected keywords for any specific record will import into mdEditor, but the saved list will not be.

 Example ISO Topic Category keyword entry

Taxonomy Tab: Product

Quick Reference: Product Taxonomy Tab	Required?
Taxonomy	Required, if applicable

Please see the taxonomy guidance in the Project Entry Guidance section.

Taxonomy is required for projects and products, as applicable.

Extent Tab: Product

Extent refers to geographic boundaries for your project. Spatial extents lets users see at a glance the geographic footprint of your project and allows searching within specific geographic areas.

Quick Reference: Product Extent Tab	Required?
Extent	Required

Spatial extents should be included for all applicable products. As a default, products should inherit extents from their parent project. geoJSON files for specific geographies are available on ScienceBase (private DMWG folder that requires ScienceBase login). Download the relevant files and then import the geoJSON files into mdEditor.

> Tip: You can export, save, and import an extent to use for other projects or products.

See further information on Extents in the Project Extent entry guidance.

Lineage Tab: Product

Lineage is used to track the process of building datasets. It is most relevant for spatial datasets, but can be used for any dataset. Lineage entries are used to describe the steps and sources used to create the product, and document the roles and contacts for the product contributors. Completing the lineage tab is recommended, but not required.

- **Statement** (Required): Notes actions taken to verify, transform, repair, and integrate the resource.
- **Process Step** (Optional): Consult the **Process Step** section of this manual to learn how to add information about the creation of your project.
- **Sources** (Optional): Use the Sources field to indicate what you used to create the product and then write a statement. *This can be done instead of completing all other fields in this tab.*
- **Citation** (Optional): If you have a citation for a manual, enter it here. *This can be done instead of completing all other fields in this tab.*
- **Scope** (Optional): Select type from the picklist.

 Example lineage editing view

Product Entry Guidance: Process Step

Process Step allows for documentation of the steps taken to build a dataset.

The following are available and required:

- **Step ID**: (Auto filled depending on the number of Process Steps added).
- **Description**: Add a description of the process step.

The following fields are available but optional:

- **Step Sources**: Information about the source data used in the process step.
- **Step Products**: Information about an intermediate data set.
- **Processors**: Processors of the process step.
  - Select or enter a role from the **Role** drop-down and select a contact ****from the** Contacts** drop down.
  - Consult the **Contacts** **section of this manual to learn about adding contacts.
- **Step Reference**: Add a citation noting your step process references.
- **Time Period**: Add a time period noting the **Start Date, End Date**, ****and** Fiscal Year**.
  - **ID**: Add a unique identifier for the time period.
  - **Description**: Add a description of the time period.
  - **Time Period Name**: Add a name for your time period.
  - **Interval**: Enter an **Interval Amount** and **Time Unit** of the time period.
  - **Duration**: Describe the time period in terms of **Years**, **Months**, **Days, Hours**, **Minutes**, and **Seconds**.
- **Scope**: Select the type of resource from the drop-down menu.

Distribution Tab: Product

Distribution provides documentation on how or where users can obtain products. Distribution methods may include online options (e.g., website, database) or offline options (e.g., delivery via mail, library).

> An online distribution link is required for any products sent to data.gov.

Quick Reference: Required for SA Products	Required?
Contacts and Role	Required
Transfer Options: Online Option	Required

*Click **Add Distribution Section** and then **Edit Distributors** to begin adding distributors.*

Distributor

This section involves adding distributor information and a URL for data products that are hosted anywhere. For example, if The Nature Conservancy is hosting a data source, the distributor is "The Nature Conservancy."

Contacts and Role (Required)

If anything is filled out in the distribution section, a contact must be added. The appropriate role is "distributor."

The contact should ideally be someone who will remain available to respond to potential inquiries about the product. If there is not an appropriate contact specific to the product, you can use a generic SA Data Steward contact for a long-term backup contact.

Transfer Options (Required)

Transfer Options provide details regarding obtaining the product. Online and offline options are available.

Online Option (Required if Available)

Name

The Name of the online resource should be something that indicates it is a product page where the data can be downloaded. Examples: "product webpage" or "Product Webpage with Downloadable Files." If there are multiple files for a single product record, the Name should be different for each file so the user can differentiate between them. For example, "Download Aguiguan Veg 2016 data" or "Download FDM Veg 2011 data."

> Unique Names for multiple files are particularly important for items being sent to data.gov. Without a name specified at all, the link will display as "webpage," which isn't particularly informative to users. Identical names for different files also won't be particularly informative.

URI

The most important thing to enter is the URL where the product can be accessed or downloaded.

> An online link is required for any products sent to data.gov. Preferably the link should be a direct download to the data and not an intermediary page.

Function

In the Function field, you should indicate the type of URL. If the link is a direct download of the data, select “download.” If the link goes to an informational page, select “information.”

How to obtain download link from ScienceBase Items

For products hosted on ScienceBase, obtaining the direct download URL is a little tricky. The text displayed on the ScienceBase page under Attached Files is not actually a link (so you can't right-click and copy link address from there). Here are directions for how to obtain the direct download link for ScienceBase items.

(1) First scroll to the Attached Files on the ScienceBase item and click the Attach Files control.

(2) From the list of attached files, find the relevant file, right click the name, and select "copy link address." Then paste that link into the Online Option in mdEditor.

Offline Option

If your product is only available offline, describe how users can obtain the product here.

Example Distributor

Constraints Tab: Product

The Constraint tab allows you to enter information into the metadata about how the resource can and cannot be used.

Quick Reference: Product Constraints Tab	Required?
Use Limitation	Optional
Legal	Required
Security Constraints	Best Practice

Use Limitation

Identify concerns over how people should or should not use the product.

> If your product is licensed, let people know here. Typically files used will be public domain, but not always.

Legal

- **Access Constraints:** Access constraints are applied to assure the protection of privacy or intellectual property and any special restrictions or limitations on obtaining the resource.
- **Use constraints**: How the product should be used.
- **Other constraints:** This is a place to put standard disclaimers.

Access Constraints are limited to Open, Limited Access, Sensitive/Protected, and Restricted

Open Access

Data and content created by government employees within the scope of their employment are not subject to domestic copyright protection under 17 U.S.C. § 105. Government works are by default in the U.S. Public Domain. If no other open license applies, the following URL should be used in the license field.

```
http://www.usa.gov/publicdomain/label/1.0/
```

The default U.S. Public Domain status of U.S. Government Works is limited to the jurisdiction of the United States. A public domain status is applicable internationally for works produced by government employees, by using a worldwide public domain dedication such as Creative Commons Zero. This assures users of U.S. Government Works that they have full permission to freely use the work internationally. When Creative Commons Zero has been applied, the following URL should be used for in the license field.

```
https://creativecommons.org/publicdomain/zero/1.0/
```

 Example legal constraint entry for U.S. Government Works open license

Limited Access

Sensitive/Protected Access

Restricted Access

Security Constraints

**A place to describe constraints or restrictions pertaining to security of the resource. Choose classification from the drop-down menu. For products without restrictions, best practice is to indicate 'unclassified' from the security classification dropdown menu.

> Classification is the class of security (e.g., top secret, public access).

Dictionaries Tab: Product

The **Dictionaries** tab links the product metadata record to a data dictionary that you define. Data dictionaries define attributes of data that are tabular in nature.

There are no SA specific requirements or best practices for dictionaries.

Documents Tab: Product

The **Documents** tab is where additional references to resources that *relate* to your product but do not *define* or *describe* the item are added. These can include videos, webinars, books, posters, web pages, news releases, etc. This should not include links to project or products. An example document could be a report for a workshop that inspired the product.

There are no SA specific requirements or best practices for documents.

> ScienceBase has a similar section called "weblinks." These will be populated in the Documents section if sbJSON is imported into mdEditor.

For more information, consult the Documents section of the mdEditor manual.

Associating Records: Product

The **Associated** section is used to connect metadata records with each other. This feature should be used when items are related. For example, products are often the result of projects, and projects can have sub-projects. Projects and products can be linked together by using an association. Adding associations will allow users to find items that relate to each other quickly and easily.

> In ScienceBase, **Associated Records** are referred to as **Item Associations**.

> Remember: Project-product associations are different than parent-child relationships on ScienceBase.

Create Associations

In mdEditor, the association can be created either from the Project record or the Product record. The "Association Type" will define the association from your current record to the linked record. Specifying the "Linked Association Type" will create the association from the other direction.

> Important: It is recommended you ALWAYS specify the Linked Association Type when you create associations. This will ensure the associations are defined from both directions and be present in the metadata regardless of how the metadata is translated or where it is used in the future.

If records are imported from ScienceBase, the record associations might be automatically created, but sometimes the associations may need to be recreated manually (as described below). Associations can only be made after both project and product records have been created in mdEditor.

Quick Reference: Creating an Association in a Product Record
1. Select "**parentProject**" from the Association Type drop-down menu.
2. Use the *Select a Record* button to select an associated project.
3. Choose the project that you would like to associate from the "Select a Resource" list.
4. Fill out the Linked Association Type with "**product**."

Step-by-Step: Creating an Association in a Product Record

Step 1: Select "**parentProject**" from the **Association Type** drop-down menu. This field will describe the relationship from the associated record to the product record (the associated record is the parentProject of the product record you are editing).

Step 2: Click the "**Select a Record"** button to select an associated project.

Step 3: Choose the project that you would like to associate from the **Select a Resource** list.

Step 4: Fill out the Linked Association Type with "**product**."

Co-funded Project Requirements

This section describes the additional metadata entry requirements for documenting projects and products that involved multiple SA regions or FWS programs, or were co-funded with the USGS Climate Adaptation Science Centers (CASCs) or other federal bureaus. SA metadata requirements and best practices described in Project Entry Guidance still apply, unless otherwise noted below.

Goals

The goals for these guidelines are:

1. to identify when a project is co-funded and which protocol to follow;
2. to maintain consistent, quality metadata records for projects and products across all FWS regions for inclusion in the SA Science Catalog;
3. to avoid duplicate reporting of the same funding dollars, while also allowing each regional program to fully describe its financial contribution and project support;
4. to avoid the appearance of duplicated research efforts between FWS and CASCs or other federal bureaus (see Policy Guidance)
5. and to clearly communicate the relationships between separate, but related, FWS and CASC funded projects to the public.

Terms

Multi-regional refers to a single project or product that is supported by more than one FWS region. Support may come in the form of collaboration, in-kind donations of effort, and/or funding allocations.

Multi-regional co-funded refers to a single project that is financially supported by more than one region.

Lead region refers to the region that was instrumental in initializing and administering a project. There can be only one lead region per project.

CASC co-funded refers to a single project or product that is supported by one or more FWS region and one or more USGS Climate Adaptation Science Centers (CASCs).

Matching refers to funds or in-kind donations of effort that are provided by organizations outside of FWS.

Project is a particular effort in a particular geography with specific outcomes.

Sub-project is an effort that is related to a project, but is distinctly different in some specific aspect, such as geography, goal, or product. A sub-project often expands the scope of a project or grows from a research need identified by the project (aka parent project). If two regions fund similar work in different geographical regions, or for different species with separate deliverables, then these are considered to be separate projects. If both projects are part of a larger effort, and/or administered from the same grant, and/or developed in collaboration with the same investigators, then these are sub-projects.

Scenario Descriptions

Collaborating Project: One Service region leads a project with joint support or cooperation in the form of advisory consultation or staff time from another region. The collaborating region(s) does not provide direct funding support.

Sub-Project (see definition above): One region (Region A) is the lead for a large project (parent project), while another region (Region B), funds a distinct sub-project effort or distinct deliverable of the large project. This scenario can apply to FWS-CASC parent projects and may include project continuations when new objectives or deliverables are described.

Multi-regional Co-funded Project: One region leads a project with funding support from another region(s). The project cannot be divided into distinct sub-projects.

FWS/CASC Co-funded Project: FWS region(s) and CASC(s) co-fund a project without distinct sub-projects or products.

See the flowchart below for identifying which protocol to follow.

Collaboration Protocol

Applicability

Refer to this protocol if:

- Multiple regions, programs, etc. collaborate on a single project where only one region provided funding (this funding region is the lead). There can only be one lead region per project.

Metadata Responsibility

The lead region data manager is responsible for project and product metadata. There should only be one metadata record for each collaborating project and product. These records will publish and be searchable in the Science Catalog for each collaborating regions identified in the metadata.

> If the project is collaborative between multiple regions but neither provides direct funding allocations, the regions should determine who will be the lead region and be responsible for entering the metadata.

In addition to metadata requirements described in Project Entry Guidance, enter the following for projects with multiple Service regional or program collaborators:

Funding/Other Contacts

Include the lead region and/or program in other funding Contacts as 'administrator' (see Contact Entry Guidance).

Sub-Project Protocol

Applicability

Refer to this protocol if:

1. A region or program funds a distinct portion or sub-project of a larger project (aka parent project) or a distinct product of project supported by another region or program, see Sub-project of FWS Region or Program Project.
2. A FWS region or program funds a distinct portion of a CASC project or vice-versa, see Sub-project of CASC Project.

In this case, the funding information should only be entered in a project metadata record once. If the funding for a sub-project is distributed separately, then it can be included in the sub-project metadata. Otherwise, if the sub-project was funded from a parent project and the funding allocation is not distinctly identified, then all the funding information should be included in the parent project metadata. Funding allocations should NOT be duplicated in multiple metadata records.

Sub-project of FWS Region or Program Project

When a project is a sub-project (aka child project) of a larger Service project, complete a project metadata record for the sub-project as in Project Entry Guidance with the following additions. Products of a sub-project are handled as described in Product Entry Guidance with no additional requirements.

Main/Points of Contact

Add the parent project region(s) or program(s) as a “collaborator”.

> Note: the region or program that is funding the sub-project or distinct product is the “administrator” in the sub-project funding metadata as described in Funding Tab: Project.

Metadata/Metadata Contacts

The default publisher is USFWS. The lead region or program may be included as “publisher”, but this is not required. Collaborators do not need to be listed here either.

Associated

Associate the relevant projects, sub-projects, and products with each other in mdEditor as described in Associating Records: Project. Your ownership/edit access to the related items will determine how you enter the associations in mdEditor. Information below refers to the Associated tab.

When you have edit rights to Parent Project

If your sub-project falls underneath a project that you also manage or have edit rights, you can create the association by defining the association type and linking your records as normal (see Associating Records: Project).

In the Associated tab, add the association type as one of the following and select the appropriate record to link:

- As parent project to sub-project relationship: “parentProject”/”subProject” or vice versa
- As parent project to product relationship: “parentProject”/“product”
- If neither is a parent of the other, as Part of the other project: “isPartOf”/“isPartOf”

When you do NOT have edit rights to Parent Project

If your sub-project falls underneath a project to which you do not have edit rights for its ScienceBase record or mdEditor file, the metadata records will need to be associated manually within mdEditor (or contact the metadata owner to request assistance with creating the association.)

To create the association manually, enter the association type as described above, enter the resource type, then copy and paste the title and ScienceBase Identifier for the associated item (see Figure 1).

If creating associations to other regional or program items that have s SA Science Catalog tag, then those items will show up in the Science Catalog, along with your sub-projects and products.

> If your sub-project falls underneath a CASC project, refer to the next page: Sub-project of CASC Project .

 *Figure 1: Example entry of ScienceBase Identifier in mdEditor Associated tab.*

Sub-project of CASC Project

USGS CASC have their own metadata requirements. If your project is a sub-project of a CASC project, complete a unique metadata record with the following requirements. Products of a sub-project can be entered as described in Product Entry Guidance.

If the SA and CASC contributions cannot be teased apart into project and sub-project, then follow the co-funded protocol instead.

Main/Points of Contact

Add the CASC as a “collaborator.”

Main/Abstract

Add the following text as the last sentence:

“This project is a sub-project of the [X] Climate Adaptation Science Center project described here [insert hyperlink to CASC ScienceBase URL].”

- Example: “This project is a sub-project of the South Central Climate Adaptation Science Center project described here.”

Metadata/Metadata Contacts

Default is USFWS, if Service is lead on the project, as “publisher.”

Collaborating CASCs do not need to be listed here.

Associated

Since the CASC metadata is outside the SA communities in ScienceBase, you must manually associate the CASC projects both in the mdEditor Associated tab and directly in ScienceBase.

Associations in mdEditor

Manually associate the CASC project as a “subProject” relationship in the Associated tab.

1. Populate the association type as “subProject”.
2. Enter the appropriate resource type.
3. Copy the CASC’s project title to the title field.
4. Enter the CASC as the “administrator” in the Responsible Parties section.
5. Add the CASC ScienceBase item URL in the Online Resource field. This is important to provide discovery and access to items outside of the SA Science Catalog.
6. Add the ScienceBase Identifier of the CASC project.

The CASC associated items will not appear in the Science Catalog as standalone items, but will appear as links in SA records in the Science Catalog. The assumption here is that the sub-project metadata contains all SA-relevant information and contributions and the CASC project record is essentially not needed.

Associations in ScienceBase

The only associations that ScienceBase currently recognizes from mdJSON are parentProject/product relationships. ScienceBase will not recognize the “subProject” association created in mdEditor, so this association must be added directly in ScienceBase.

1. Log in to your ScienceBase account to edit the appropriate ScienceBase item.
2. Click “Associate an Item” from the right side column of the ScienceBase page.
3. Add a “subprojectOf” association to the CASC ScienceBase item.

Co-funded Protocol

There are two types of co-funded protocols.

1) One or more region or program provides funding for a project and the project can not be divided into distinct sub-projects to be attributed separately to any region or program. In this case, follow the FWS co-funded Projects guidance.

2) A project is funded by a Service regional program AND by a CASC or other DOI agency where the project can not be divided into distinct sub-projects to be attributed separately. In this case follow, the FWS/CASC Projects guidance.

FWS co-funded Projects

Applicability

Refer to this protocol if:

- One or more regions or programs each contribute funding for a project and distinct sub-projects or products cannot be identified and attributed to any region or program.

Metadata Responsibility

The lead region or program data manager is responsible for project and product metadata. There should only ONLY ONE metadata record for each multi-regional or programmatic project and product. These records will be searchable in the Science Catalog for each collaborating entity identified in the metadata.

In addition to standard metadata requirements as described in Project Entry Guidance, include the following additions.

Main/Point of Contacts

Add the name of all funding entities as a “collaborator.”

 Example of mdEditor contact entry for FWS co-funded project

> The lead region or program should be listed as “administrator” and does not need to be added again as a “collaborator.”

Main/Abstract

Add the following text as as the last sentence:

"This [project/product] was a collaborative effort and co-funded by multiple USFWS regions and/or programs: Region A, Region B, and Region C.”

- Example: This project was a collaborative effort and co-funded by multiple USFWS regions: Upper Midwest Region 3 & Northeast Region 5 .
- Example: This product was a collaborative effort and co-funded by multiple USFWS regions and programs: Midwest Region 3 Science Applications and Migratory Birds Programs.

Metadata/Metadata Contacts

Default is USFWS as “publisher.”

Collaborators do not need to be listed here.

Funding (for Projects only)

Add a separate funding allocation for each year and each region or program that provided funding as described in Funding Tab: Project.

1. The source should be U.S. Fish and Wildlife Service.
2. Add the funding region or program associated with the amount as the “administrator” in the Other Contacts section in mdEditor (see Figure 2).
3. Each funding allocation must be entered separately for each funding program or region.

 Example of mdEditor entry for funding allocation from FWS co-funded project.

FWS/CASC Projects & Products

Applicability

- One or more Service regions or programs provides funding support for a project with one or more USGS Climate Adaptation Science Center (CASC) or other DOI agency where distinct sub-projects or products cannot be separately identified and attributed to either agency.

Metadata Responsibility

This protocol was developed with the CASCc and therefore, focuses on their specific needs, but may be applied to other DOI agency collaborations. The Service data manager is responsible communications with the partner agency and for processing the project and product metadata for inclusion in the SA Science Catalog. The CASC data manager will complete their metadata responsibilities for the CASC records independently according to their requirements.

Co-funded Project Workflow

For projects and products co-funded with the CASC, the CASCs will create their own ScienceBase items according to their requirements. In order for those projects and products to be included in the SA Science Catalog, a duplicate metadata records need to be created and linked to the CASC metadata records. While duplicate metadata records are not the preferred option, the specific individual requirements for each agency warrants this system.

The general approach is to make a copy of the CASC metadata in mdEditor, modify the metadata to meet SA metadata requirements, including the repository tag for the Science Catalog, **add a statement in the abstract explaining the collaboration**, and include a url link to the CASC ScienceBase record. The statement in the abstract and the links to the CASC ScienceBase records will clarify that these are alternate references for the same item (not duplicative efforts), and in the case of products, provide access to the actual data/tool/etc. hosted on ScienceBase. These additions are detailed below.

Workflow Option 1

1. Import the sbJSON for the CASC record.
2. Delete the SBIDs specific to the CASC record.
3. Modify the metadata to meet SA metadata requirements.
4. Complete the additional metadata requirements as described below.

Workflow Option 2

1. Create a record from scratch in mdEditor.
2. Copy the title, abstract, and other pertinent info from the CASC ScienceBase record.
3. Complete the additional metadata requirements for a co-funded project as described below.

Main/Point of Contacts

Add all collaborating Service regions/programs and CASCs as “collaborator.”

> The lead Service region/program should be listed as “administrator” and does not need to be added as a “collaborator.”

Figure 1: Example of mdEditor entry for Main/Point of Contact

Main/Citation/Online Resource

Include the link to the CASC's ScienceBase project page as an online resource.

- Name the link with “X Climate Adaptation Science Center ScienceBase Project Page.”

Main/Abstract

Add the following text as the last sentence:

“This project was co-funded by the USFWS region [A, B, C] and [X, Y, Z] Climate Adaptation Science Centers. An alternate reference to this project can be found here: [insert CASC ScienceBase URL].”

- Example: “This project was co-funded by the USFWS Southeast region 2 and the South Central Climate Adaptation Science Center. An alternate reference to this project can be found here: https://www.sciencebase.gov/catalog/item/5887c1c3e4b02e34393da82d.”

The CASC will include a parallel statement in the Summary field for their ScienceBase record (and link back to the this record).

Main/Supplemental Information

Add the following text (Best Practice):

“This product was co-funded by the [A, B, C] Landscape Conservation Cooperatives and [X, Y, Z] Climate Adaptation Science Centers. An alternate reference to this product can be found here: [insert CASC ScienceBase URL].”

- Example: “This project was co-funded by the Gulf Coast Prairie Landscape Conservation Cooperative and the South Central Climate Adaptation Science Center. An alternate reference to this product can be found here: https://www.sciencebase.gov/catalog/item/5887c1c3e4b02e34393da82d.”

Metadata/Metadata Contacts

Include the USFWS as “publisher.”

Collaborators do not need to be listed here.

Funding (Project Only)

Service Allocations

Add a separate funding allocation for each year and each Service program or region that provided funding.

1. For SA allocations, the source should be U.S. Fish and Wildlife Service.
2. Add the funding Service program or region as the “administrator” in the Other Contacts section (see Figure 2).

 *Figure 2: Example of mdEditor entry for an SA funding allocation.*

CASC Allocations

1. List the source of CASC allocations as U.S. Geological Survey.
2. Add the funding CASC as the “administrator” in the Other Contacts section.
3. Check the matching funds box (see Figure 3).

Figure 3: Example of mdEditor entry for a CASC funding allocation.

Associated

Since the CASC metadata is outside the SA communities in ScienceBase, manually associate the CASC projects both in mdEditor Associated and directly in ScienceBase.

Associations in mdEditor

Manually associate the CASC project as an “alternate” relationship in the Associated tab in mdEditor.

1. Populate the association type as “alternate”.
2. Enter the appropriate resource type.
3. Copy the CASC’s project title to the title field.
4. Enter the CASC as the “administrator” in the Responsible Parties section.
5. Add the CASC ScienceBase item URL in the Online Resource field. This is important to provide discovery and access to items outside of the SA Science Catalog (see Figure 4).
6. Add the ScienceBase Identifier of the CASC project.

 *Figure 4: Example of mdEditor entry for Online Resource. Online resource links must be added for associated items that do NOT have metadata in the SA Science Catalog in order to ensure access and discoverability.*

Associations in ScienceBase

The only associations that ScienceBase recognizes from mdJSON are parentProject/product relationships so it will not recognize the “alternate” association created in mdEditor. This association must be added by hand directly in ScienceBase.

1. Log in to your ScienceBase account to edit the appropriate ScienceBase item.
2. Click “Associate an Item” from the right side column of the ScienceBase page.
3. Add an “alternate” association to the CASC ScienceBase item (see Figure 5).

 *Figure 5: Example of entering an association directly in ScienceBase. From the SA project record, select “Associate an Item” and enter the SBID of the CASC project record and select “alternate” as the relationship type.*

Distribution (Product only)

Include the CASC weblinks and identifiers that were entered in the mdEditor Associated tab in the Online Resource section.

- List the role of the CASC as “owner.”

The Distribution links are critical for providing access to the actual data/tool/etc.

Notifying CASCs

Enter your SA/CASC co-funded Projects and Products on this spreadsheet.

Ideally enter items on the spreadsheet after having completed the co-funded metadata requirements and published to ScienceBase. If you prefer to enter information on this spreadsheet before completed those steps, be sure to indicate the status of your edits/publishing in the "FWS Edits" column.

CASC data managers will refer to the spreadsheet so they know when to make edits on their end.

CASC Responsibilities

The CASCs will complete the following metadata responsibilities for the CASC records for co-funded projects and products, after being notified that a Service metadata record has been created with associations to the CASC ScienceBase records.

Co-funded Protocol

When a CASC project is co-funded with the Service:

CASC will add the following statement to the Summary in the CASC ScienceBase record:

- “This project was co-funded by the [X, Y, Z] Climate Adaptation Science Centers and the USFWS [A, B, C] region program. An alternate reference to this project can be found here[insert SA ScienceBase URL].”

Example: “This project was co-funded by the South Central Climate Adaptation Science Center and the USFWS Gulf Coast Region. An alternate reference to this project can be found here.”

The Service will include a parallel statement in the Summary field for their ScienceBase record, link back to the CASC record, and create the association in ScienceBase.

When a CASC product is co-funded with the Service:

CASC will add the following text to the Summary in the CASC ScienceBase record:

“This product was co-funded by USFWS [A, B, C] region and the [X, Y, Z] Climate Adaptation Science Centers. An alternate reference to this product can be found here[insert SA ScienceBase URL].”

Example: “This project was co-funded by USFWS Gulf Coast Region and the South Central Climate Adaptation Science Center. An alternate reference to this product can be found here.”

The Service will include a parallel statement in the Summary field for their ScienceBase record, link back to the CASC record, and create the association in ScienceBase.

Sub-Project Protocol

If a CASC project is a sub-project of a Service project:

1. Add the following text to the Summary in the CASC ScienceBase record: “This project is a sub-project of USFWS [X] region project described here[insert LCC ScienceBase URL].”
2. Add the association in ScienceBase as a “subprojectOf” the SA metadata record.

LCC Examples

The following are real examples of past LCC and CASC co-funded projects and products. The links go directly to the ScienceBase records so you can download their mdJSON to explore how these were done.

Example: Gulf Coast Prairie LCC / Gulf Coastal Plains and Ozarks LCC / South Central CASC

Project Record

Title: Occurrence and variation in submersed aquatic vegetation (SAV) along the northern Gulf of Mexico: a hierarchical approach to assess impacts of environmental change on SAV resources

- LCC item: https://www.sciencebase.gov/catalog/item/587e5cd5e4b0a765aab5ebab
- CASC item: https://www.sciencebase.gov/catalog/item/5012df8ce4b05140039e03c7

Product Record

Title: Sediment carbon, submerged aquatic vegetation and environmental variables in deltaic southeast Louisiana (2015-2016)

- LCC item: https://www.sciencebase.gov/catalog/item/5a78be62e4b00f54eb1e849c
- CASC item: https://www.sciencebase.gov/catalog/item/5887c1c3e4b02e34393da82d

Example: Upper Midwest and Great Lakes LCC / Northeast CASC

Project Record

Title: Understanding How Climate Change will Impact Aquatic Food Webs in the Great Lakes

- LCC item: https://www.sciencebase.gov/catalog/item/59fb44f5e4b0531197b16290
- CASC item: https://www.sciencebase.gov/catalog/item/500708cee4b0abf7ce733ff1

Contact Entry Guidance

Contacts are individuals or organizations that can be referenced in project and/or product metadata and in other contacts. Contacts contain information such as the names of individuals or organizations, email address, physical address, website, and phone number so that viewers of metadata can communicate with those affiliated with a metadata record. Contacts also enable users to know who is involved in the creation and maintenance of projects and products, funding of projects, and creation and maintenance of metadata.

General Info on Contacts

In mdEditor, contacts are created separately from individual records and then stored within a library in mdEditor. Once contacts have been entered or imported into mdEditor, they can be used in any metadata record. Editing a contact in the mdEditor contact library will update the contact information included in any metadata record that uses that contact. Editing a contact in mdEditor will also update contact information on ScienceBase once the record is published.

> You should maintain a single list of your contacts. Having duplicate copies of the same contact is not desirable. It can create confusion and unnecessary duplication errors as you edit and manage your metadata records.

Copying contacts will change the ID and the name (the name will be “Copy of ….”) but all the other information will remain the same in the copy.

It is recommended that you leave contacts in mdEditor between work sessions. This allows you to readily add contacts to projects and products.

> It is recommended that when you export records, you also export your entire contact list. If you do not export your contact list, and you later import a record that contains a contact not in your library, you may receive an error and have to re-enter the contact to that record. This can cause duplication errors.

Best Practices for Contacts

- Always spell out acronyms and organization names.
- Make sure your contacts are loaded and accurate in mdEditor before creating or editing your metadata records.

Contacts Seed File

The "contacts seed file" contains pre-filled information and standard naming conventions for FWS, common federal agencies, and generic Data Stewards. Using this file will increase consistency across all SA metadata records for common contacts and reduce the amount of processing needed before records go into the Science Catalog.

SA maintains a 'seed' list of contacts that can be found in the SA ScienceBase community item page.

Importing Contacts from ScienceBase

When you import a ScienceBase record, mdTranslator will automatically load all sbJSON contacts into Main/Citation/Responsible Parties. You MUST review this to check for errors and inconsistencies introduced during translation. Delete any duplicate or extraneous contacts or any errors. Then continue with edits to meet requirements, follow best practices, and add other contacts as desired.

Summary Contact Requirements

The following compiles all of the required and recommended contact information for project and product metadata. This information is also listed in the specific metadata sections in the manual.

Locations for Contact Information

Once your contacts have been created in mdEditor, there are five places in a metadata record where you should add contacts.

Please see the corresponding sections for which contacts should be added where.

1. Main Tab / "Point of Contact" section
2. Main Tab / Citation / "Responsible Parties" section
3. Metadata Tab / "Contacts" section
4. Funding Tab / "Allocation" section. For Projects only.
5. Distribution Tab / "Contacts" section. For Products only.

Main / Point of Contact

Role	Contact	Required?
pointOfContact	SA National Data Steward	Required
pointOfContact	your region Data Steward	Best Practice
pointOfContact	data steward	Required
custodian	data custodian	Best Practice
principalInvestigator	The Project PI	Best Practice
administrator	FWS project officer	Required
administrator	FWS region	Required
administrator	FWS program	Best Practice

Main / Citation / Responsible Parties

This must include a point of contact, but may also include other responsible parties such as funders (including your LCC), partners, collaborators, and contributors. Collaborators could be intellectual participants while contributors could be intellectual and financial participants.

Role	Contact	Required?
principalInvestigator	The Project PI	Required

Metadata / Contacts

Role	Contact	Required?
author	See notes below	At least one is required
publisher	default is FWS	Required
pointOfContact	FWS data steward	Required

Regarding Role of "author"

- The author does not necessarily have to be the data steward (e.g., imported FGDC metadata can list the original author).
- "Author" can be an individual or an organization.
- You can enter your regional or program data manager as the “author”. If you prefer, you can use a generic data manager contact rather than an individual name.
- At least one contact with the role of “author” is required.

Funding / Allocation (for Projects only)

Source (Required)

Add the relevant contact for the “source” of the project funding. Source should be an organization, not an individual. For FWS projects, the default source is U.S. Fish and Wildlife Service. Regions or programs should be added as the funding "administrator" in the Other Contacts field.

> Funding source should always identify the agency or organization, rather than a sub-program or office. For example, all funding from other FWS programs need to list U.S. Fish and Wildlife Service as the source (and not list the source as Fisheries, specific Refuges, ES, etc.). Clarifications on the exact program or office where the funding came from can be done through the Funding/Other Contacts field (and choose the role of "administrator").

Recipient (Required)

Add the relevant contact for the “recipient” of the project funding. Recipient should always be an organization, not an individual. For example, the Principal Investigator would not be listed as the recipient, but their organization would be. If there are multiple recipients for a project, they should be added as separate allocations.

The Principal Investigator may be added n the Other Contacts field as "principalInvestigator."

> Funding administrator can also be used to differentiate funding from different programs/offices within the same agency. For example, the U.S. Fish and Wildlife Service can be identified as the funding source and the funding administrator could include "Ecological Services" or a specific field office.

Distribution (for Products only)

- Add the relevant contact for “distributor” of the product.

Individual Contacts

Create a New Contact

1. Click the plus () sign by **Contacts**.
2. Specify the contact is an **Individual**.
3. The **Contact ID** will be auto-generated by mdEditor.

*The following fields are available for **Individual Contacts:***

- **Individual Name** (Required): Enter individual's full name If you are entering a generic Individual contact, you can enter a Position Name without entering an Individual Name. For example: you could enter Region 3 Data Manager as a Position Name rather than an Individual Name.
- **Position Name**: Enter individual's full title; avoid acronyms If you have entered the individual's name, Position Name is not required.
- **Contact Type** (Required): Enter the contact type from the picklist. Make sure that every contact has Contact Type selected - this is essential for the Science Catalog funding summaries.
- **Member Organization** (Required): Select organization(s). An individual may be part of multiple organizations.
- **Email Address** (Required): Enter individual's email
- **Physical Address** (Best Practice): Enter a physical address
- **Logo** (Optional):
  - It is uncommon that you would add a logo for an individual. If the individual is part of an organization, the individual will inherit the logo from the organization.
  - You can either select or drop-in an image. If you choose to load an image, mdEditor will create a URI and has a size limit for the logo. If you have a larger image, link to the image rather than loading it into mdEditor.

If you upload a logo to your contact record, you must include a filename for the logo. Otherwise, mdEditor will indicate an error on the metadata records that includes this contact.

SA Network Data Steward

The SA National Data Steward is required as a "PointOfContact" in the Point of Contact section of the Main Tab and in the Contacts section of the Metadata Tab.

The SA National Data Steward:

- **Individual Name:** SA National Data Steward
- **Contact Type:** federal
- **Email Address:** sadatasteward@fws.gov

 Example generic data steward contact

> For more information, consult the **Individual Contact** **section of the mdEditor manual.

Organization Contacts

Create a New Contact

1. Click the plus () sign by **Contacts**.
2. Specify the contact is an **Organization.**
3. The **Contact ID** will be auto-generated by mdEditor.

*The following fields are available for **Organization Contacts:***

- **Organization Name** (Required): The organization's full name; avoid acronyms (however, abbreviating United States as U.S. is acceptable. Example: U.S. Fish and Wildlife Service).
- **Contact Type** (Required): Enter the contact type from the picklist. Make sure every contact has Contact Type selected - this is essential for the Science Catalog funding summaries.
- **Email Address** (Required)**:** Add an email address of the primary contact in the organization.
- **Online Resource** (Required): Add a web URL where the organization resides. Online resource may also include social networks.
- **Physical Address** (Best Practice): Enter a physical address
- **Logo** (Optional):
  - You can either select or drop an image. If you choose to load an image, mdEditor will create a URI and will have a size limit for the logo. If you have a larger image, link to it rather than loading it into mdEditor.
  - If an organization has a logo associated with it, individuals will inherit the logos from the organization.

If you upload a logo to your contact record, you must include a filename for the logo. Otherwise, an error will occur n the metadata records that include that contact.

> For more information, consult the **Organization Contacts** **section of the mdEditor manual.

Publish

[NOTE: the Publishing instructions still need some editing/refinement.]

SA metadata is currently published to ScienceBase in your SA community's project folder. You must have a ScienceBase user account with write access to this folder. Once the mdJSON metadata is published in ScienceBase, the records will be synced with the SA Science Catalog (the Science Catalog updates overnight with new/updated mdJSON).

Before You Begin

Please read through ALL instructions before you begin the publishing process. After you understand how the publishing function works, please read the **testing instructions** and proceed with testing a record before you try to publish any of your real records.

Overview of Publishing to the Science Catalog

The following describes what happens when you publish from mdEditor:

1. mdEditor outputs an mdJSON file.
2. The mdJSON file is transmitted via a web service to mdTranslator.
3. mdTranslator translates the mdJSON file into a sbJSON file and an XML file.
4. ScienceBase imports the sbJSON and attaches the XML and mdJSON files to the ScienceBase item.
5. The record is sent to data.doi.gov and the SA Science Catalog, if the requisite metadata repositories are specified.

Requirements for Publishing

Publishing requires the record to be a **valid record**, meaning that mdEditor checks that all required fields for a mdJSON file are present before allowing a record to be published.

> Note: mdEditor does not check for SA specific requirements as documented here. It only checks that the metadata meets ISO requirements. Fulfilling SA requirements falls on the creator of the records. Consult the **Project Entry Guidance** and **Product Entry Guidance** sections for SA requirements.

Publishing requires every record to have a parent Identifier that identifies the ScienceBase folder where your record will be sent upon publishing. If you set up your Default Parent Identifier in Settings, then you do not need to add a parent ID to your individual record. However, if you need to publish your record to a location different than your default folder, then you need to edit the Parent ID in your metadata record to the different location (see Metadata/Parent Metadata).

> Note: Please use a testing folder before you update your real records. (Consult the **Instructions for Testing Publishing** section of this manual for more information).

Testing Publishing

For tracking issues with mdEditor, please use the github thread here and sign up for notifications via email.

> Note: Please use a testing folder before you update your real records. Consult the **Instructions for Testing Publishing** section for more information.

1. Determine your workflow for testing:

   If you **DO NOT** already have items on ScienceBase. Choose a project and its products to test.

   BEST MANAGEMENT PRACTICE: It's recommended that you export a project and its products into its own mdEditor file. Set default parent identifier as a ScienceBase folder.

   If you **DO** already have items on ScienceBase, choose one of the following approaches. *Note that this procedure may affect your existing records.*

   Approach 1 - Take a simple project and product set, and make a copy of the mdEditor records. In the test version, delete all ScienceBase IDs (SBIDs) and parent IDs. The SBID will either be located in the citation, or if you imported the record from SB, the SBID will be the record identifier. Set default parent identifier as a folder.

   Approach 2- Publish directly to a real record if you have confirmed a backup copy exists, in the event that the record is deleted in ScienceBase.

2. Set your **Default Parent Identifier** in Settings.
3. Select one project with its associated products to test.
4. Follow the publishing instructions above for the scenario that applies to you.
5. Look for any errors in the third column. If you see an error that is 400 and red, it's a problem that you can address. However, if it's a 500 level error in red, that is a ScienceBase error that is outside the scope of the mdEditor.
6.
7. **NOTE:** Any unsolvable issues can be submitted on the issues page for mdEditor: https://github.com/adiwg/mdEditor/issues. You must have a github account in order to post.

   Advanced users can check errors using the console. Consult the **Advanced Users** section of this manual to learn more.

8. Verify that your test records have published as expected in your folder on ScienceBase (or to the real record if that's how you are testing).
9. After you are satisfied with how your test records published to ScienceBase, continue to step 10.
10. Update your mdEditor settings to your real Default Parent Identifier.
11. Using the record you just tested, proceed with publishing to the real location on ScienceBase.
12. Make sure any test SBIDs are removed entirely from the record you want to actually publish.
13. Verify that the real records have updated as expected.
14. Proceed with publishing your other records to their real locations. It is advisable to publish 1 or 2 records at a time, since ScienceBase can time-out and fail when publishing records simultaneously.

How to Publish

BEST PRACTICE: Always refresh your browser before you access the publishing menu to ensure that you are using the most updated version of mdEditor. However, if you have already moved items around in the publishing outline (see below for details), note that you will lose this information if you refresh.

Publishing Overview

Step 1: Login to ScienceBase

Step 2: Move Records in the Publishing Outline, as needed

Step 3: Submit for Publishing

Step 4: Review Records on ScienceBase

Step 5: Review Entries in the LCC Science Catalog

Step 1: Login to ScienceBase

1. Click the **Publish** button from the top menu in mdEditor.
2. You will be asked to select a *publishing service*. Click on ScienceBase.
3. A login window will appear on the right side of the screen - enter your ScienceBase ID and password, and click **Login**. When you are logged in, the login window will display who you are logged in as. *The current user must have read/write permissions on ScienceBase for any items to be published (including parent items)*. You cannot publish until you are logged in.

The mdEditor Publishing Outline:

You will see a list of every valid record in mdEditor in the publishing outline with its ScienceBase Identifier (if the record already exists on ScienceBase) and its parent ScienceBase Identifier (if present in the metadata). This publishing outline shows records in a parent-child relationship and reflects what you would see when you publish to ScienceBase.

> Remember: Parent-Child relationships refer to how the records are organized and displayed on ScienceBase. This is different than the Project and Product associations identified within the metadata records.

- Records **without parent IDs** already in their metadata will appear directly under the ScienceBase header in the publishing outline. These records will be published under the default parent identifier you established in the settings. The Default parent identifier is listed in the ScienceBase header, which is hyperlinked to the record on ScienceBase.
- Records **with parent IDs** identified in their metadata will appear below a thick blue line and will be published under the parent ID listed in their metadata.

Items directly below the ScienceBase header will be published under the ScienceBase item identified in your settings as “Default Parent Identifier.” Items below the blue line will be published under the parent ID specified in the metadata.

For example, if the *Default Parent Identifier* is your SA Community, then projects at the *root level* in the publishing outline will be added directly under your SA Community. Products nested under a project in the outline will be added as a direct child item to the project item on ScienceBase. (*Note: you may have other parent IDs identified in those records that are not loaded in mdEditor)*

Notes on Moving Records

You can drag and drop records to establish the parent-child relationship in the publish outline, eliminating the need to establish that relationship in ScienceBase. This will also allow you to move items around (e.g., move a product from one project to another) and see that change reflected on ScienceBase. *Remember, this only affects parent-child relationships on ScienceBase (i.e. file structure in ScienceBase), not project-product associations.*

> If you do not want these parent IDs to change, **do not** drag and drop these records in the publishing outline.

General Notes on Parent IDs:

- If you move a product under a different project, it will update that product's parent ID.
- Parent IDs established through the relationships in the publishing outline will overwrite existing parent IDs in the metadata.
- Dragging and dropping a record onto the ScienceBase header at the top will set that record's parent ID to the default parent ID you identified in Settings.
- If you have existing parent IDs in your metadata (and want to keep them as is), **do not** drag and drop those records onto the ScienceBase header-- this will erase the existing parent ID and insert what you have set as the default parent identifier.

Step 2: Move Records in the Publishing Outline

Before you move records in the publishing outline please select your scenario below and follow the corresponding guidance.

Scenario A

*You **do not have** items on ScienceBase yet, and your desired parent-child relationship is to have each product as a direct child of a project item on ScienceBase:*

- Your records will all display under the ScienceBase header in the publishing outline.
  - These items will be published as a direct child item under the SB item identified in your settings under "Default Parent Identifier."
- You can **drag and drop** records in the publishing outline to establish parent-child relationships for ScienceBase.
- You can **nest** items in as many levels as you desire (the most common is a product nested under a project).
- To move a record back to the root level, drag and drop it on the top line that says "ScienceBase Default".

Scenario B

*You **have** existing parent-child relationships on ScienceBase and/or you have intermediate folder(s) between project items and products (i.e., products are not direct child items of Project Items - this is not recommended).*

- If you have parent-child relationships already established on ScienceBase (and those IDs are reflected in the mdEditor records), you likely do not want to move the records around in the publishing outline.
- If your products are housed in a “Products” folder on ScienceBase (or other intermediate folders between the project item and the products), then your products **will not** be nested under projects in the publishing outline.
  - The parent ID for those products is the “Products” folder (which would not have a record in mdEditor). If this is your situation, do not change the structure in the publishing outline and publish as is (i.e., with every item organized at the root level in the outline).

Step 3: Submit for Publishing

1. To select a record to publish, click on it and it will turn green (click again to un-select it).

   You cannot publish a record without a parent ID. Sending a non-existent parent ID to ScienceBase will return an error. If your records contain parent IDs in the metadata, you can choose to publish products without publishing their associated projects at the same time.

2. mdEditor will publish your records sequentially, starting with the top record (it will publish the project first, then the products nested below it).

   - If you are publishing to your *default parent identifier* or if you have changed any project-product relationships in the publishing outline, you will see the updated parent IDs appear in the outline as publishing occurs. If you’re publishing to the existing locations on ScienceBase, the IDs will not change.
   - These new/updated IDs will be injected directly into the mdJSON file in mdEditor. However, these updated IDs will not be included in the mdJSON file that is attached to ScienceBase as part of the publishing process. You would have to publish the record a second time to update the mdJSON file attached on ScienceBase.
3. Upon successfully publishing to ScienceBase, the third column will display a date and time. The record's ScienceBase ID will be displayed in the first column, and the Parent ID will be displayed in the second column. If there are any errors during publishing, they will be noted in the third column.

Step 4: Review Records on ScienceBase

1. Once publishing is done, refresh ScienceBase to ensure everything is showing up how you expected it would show up.
   - SB items should have an mdJSON and XML file attached
   - SB items should be in the location reflected in the mdEditor publishing outline
2. You can re-publish records as needed (e.g., after updating or correcting metadata).

Step 5: Review Entries in the SA Science Catalog

The Science Catalog updates overnight so you should review newly-published records the day after you publish to ScienceBase. This will be one of your best quality control checks.

Re-Publishing

Once you have published your records for the first time, updating and re-publishing items is straightforward.

How to Re-Publish

1. Load the desired mdEditor files into mdEditor.
2. Make necessary updates and changes to the metadata.
3. Go to the Publish tab and login to ScienceBase.
4. Select the records you want to re-publish and click Publish.
5. Verify that the mdJSON file published to the ScienceBase page.

The mdJSON published to ScienceBase will contain all of the updated information you published. sbJSON (and thus what is displayed on the ScienceBase page) will not always do so. Specifically, keywords that you delete in mdEditor will not be deleted from sbJSON. ScienceBase only adds to its "tags" and does not remove tags. Currently, unwanted tags in ScienceBase need to be deleted manually in ScienceBase.

If you delete or change the metadata repository information in mdJSON, you must delete any obsolete or erroneous metadata repository tags directly on ScienceBase. These are called "Harvest Sets" on ScienceBase.

UPDATED - Archiving Requirements

Central storage of mdEditor Files

All mdEditor files (NOT just the mdJSON files) need to be in a central location accessible to the DMWG and SA Headquarters as well as the respective regional personnel. These are needed to ensure future updates, corrections, or improvements can be made to any metadata record. During the 2017 Seattle workshop, the ASG proposes that everyone post their mdEditor files to the single ScienceBase folder.

Link (you must be logged in to ScienceBase to access):
https://www.sciencebase.gov/catalog/item/59bb08efe4b091459a563da2

Folder structure

in development

Trouble-shooting Tips

Records fail to update to the SA Science Catalog:

Occasionally, an item may seem to publish correctly to ScienceBase when if fact, the mdJSON did not publish. ScienceBase items without mdJSON file attachements are not in the Science Catalog nor will the automated QA/QC checks identify issues with those records. It is strongly recommended that you check the ScienceBase scanner for any SB records that are missing mdJSON and re-publish those records before proceeding through metadata improvements. Remember that newly-published mdJSON will not be reflected in the Science Catalog until the following day (it updates daily overnight).

QA/QC Fixes

Must Do QA/QC Fixes

Main

(1) Products need to have a specific resource type selected (not “product”) AND they need to be valid resource types. See QA/QC list from DJ Case.

Main/Citation

(2) Responsible Parties need to have a valid role selected. See QA/QC list from DJ Case.

Metadata Repositories

(3a) Ensure you have a single version of your data.gov tag and it is consistent across all of your items. See ScienceBase scanner.

(3b) If you update your Metadata Repositories in mdJSON and publish to ScienceBase, you will also need to delete the erroneous version from ScienceBase (called Harvest Sets in SB). The issue is that SB doesn’t remove tags when an item is republished, it just adds to tags. This issue applies to all keywords, but it is most important to fix for Harvest Sets. This scenario can happen with both erroneous data.gov tags or misspelled Harvest Set tagging.

You may want to consider using the injector script to delete or replace erroneous versions from mdJSON. You would still be required required to manually remove the erroneous versions from SB items.

Funding

(4) LCC allocations need to list the funding agency as the source (e.g., U.S. Fish and Wildlife Service), not the LCC. See QA/QC list from DJ Case.

- Additionally, all funding from other FWS programs need to list FWS as the source (and not list the source as Fisheries, specific Refuges, ES, etc.). Clarifications on the exact program or refuge where the funding came from can be done through the Funding/Other Contacts field (and choose the role of "administrator").

(5) All allocations should list the fiscal year when the funds were allocated (this is different than a project's overall start and end dates - those are entered in Main/Time Period). There should be only a single fiscal year identified per allocation. Use the “Pick a Fiscal Year” dropdown to autofill the date fields.

(6) All allocation recipients should be an Organization, not an Individual contact. Clarifications, although not required, can be done through the Funding/Other Contacts field (e.g., list a "principalInvestigator").

Contacts

(7) All contacts need the appropriate contactType identified—this is particularly important for funding summaries. See QA/QC list from DJ Case.

(8) Address the Contact QA/QC list from DJ Case.

- Note: this is a static list that was generated during the initial creation of the Science Catalog. The spreadsheet will not update when you fix an issue listed. Please update the "Fixed" column to "yes" when you have addressed a particular item.

Keywords

(9) Fix “consevation design” Typo. Select correct option in mdEditor and re-publish. Affected records can be viewed here (this is a link to a saved Science Catalog search for the erroneous keyword).

Distribution

(10) Distribution links need to be included for products. This was already required for all products and this is particularly critical for items sent to data.gov. This is the only online resource data.gov reads so without a URL here, there is no way for a user to access the actual product. The recommended role is "distributor" (see the Product Distribution section for more info).

Note: Matt Heller is looking into a solution (mid-November) using the injector script so data managers could run this automated process themselves to meet minimum requirements.

Fixing Errors

(11) Republish any records that don’t have mdJSON attached (without mdJSON, the item will not show up in the Science Catalog). See ScienceBase scanner.

(12) Go through errors/warnings in the ScienceBase scanner (e.g., no ISO Keyword, bad repo tag, etc.) .

(13) Address remaining QA/QC issues from DJ Case.

(14) Fix the errors identified by the ASG in manual QA/QC checks of the Science Catalog. See list.

(15) Template scripting introduced some errors for some LCCs. Fixing these may be most effective with the injector script. Specific details related to these issues will be discussed with those who used the template scripting.

QA/QC Resources

There are several resources are your disposal for QA/QC of metadata. They are listed below with descriptions of what each tool can do.

Quick Links:

1. ScienceBase Scanner: tool, guidance
2. Automatic QA/QC Checks (from DJ Case): tool, guidance
3. Manual QA/QC Checks (from ASG):
    - Contacts QA/QC from DJ Case tool, guidance
    - Science Catalog Errors tool, guidance

ScienceBase Scanner

Link to ScienceBase Scanner

Harvest Set Tag

The SB Scanner will show all of the Harvest Set tags you have in ScienceBase (called Metadata Repositories in mdEditor). The following warnings may be shown:

Harvest Set Tag Warning	Definition
not valid LCC repository tag	Your Science Catalog tag is something other than "LCC Network Science Catalog" and needs to be fixed. See QA/QC Fixes for more info.
Warning: too many variants of data.gov tag. pick one and use it	You have more than one version of a data.gov tag (you must use only one version). See data.gov Metadata Repository tag for guidance.

Warnings

The ScienceBase Scanner will produce the following warnings. These are not necessarily errors, particularly if you have items on ScienceBase that are not intended for inclusion in the Science Catalog and therefore do not follow the metadata requirements. These warnings will allow you to check your SB records to ensure you have met metadata requirements and make necessary updates and corrections.

Note: if you see a warning in the SB Scanner that isn't listed here, please let Megan Cook (megan_cook@fws.gov) know to add to this list.

Warning Type	Definition
no mdJSON file	There is no mdJSON attached to the SB Item.
no BudgetFacet	There is no Budget information included for an item marked as a Project. A project published from mdEditor will result in a BudgetFacet on SB.
no Project Category	There is no LCC Project Category Keyword selected (for a project).
no Deliverable	There is no LCC Deliverable Type Keyword selected (for a project).
ResourceType should be more specific than 'product'	Products in the Science Catalog need a specific Resource Type identified, not the generic "product."
no ISO topic	There is no ISO Topic Keyword selected (for a project or product).
ResourceType should be 'project'	An item identified as "project" does not have "project" selected as its Resource Type.
no ScienceCatalog tag	The SB Item does not have the "LCC Network Science Catalog" metadata respository tag.
needs ResourceType	There is no Resource Type identified for the project or product.
bad repo tag	There is an error in the metadata repository tag for either the Science Catalog or data.gov.
No Summary	There is no Summary (aka Abstract) provided.
Short Summary	The Summary (aka Abstract) is only a few words long.

Summary View

The summary view shows:

- All "Project" type items under their LCC community, grouped by the path on ScienceBase. Projects are shown in green.
- All items of any kind below that Project item. Products are light blue and other items are red/pink.
- The pink/red items could be:
  - Intended Projects which are not marked as such yet
  - Products which are not yet linked from their Project
  - Organizational Folders beneath a project
- Any other products that are NOT located below the Project
- For each item, it will list the number of weblinks, and the number and type of file attachments.

A "[D]" added to the end of the title means that the item is marked as "Data," and a "[P]" means marked as a "Publication."

Note: Project items are those directly marked as such in ScienceBase via the browseType. Products are found via links from those Projects (i.e., a "Product" is an item linked from the Project as an Associated Item of "Produced" type).

Rescanning

Querying ScienceBase for all the items in a given Community is slow, so the SB scanner makes local copies of the query results, and drives the display of this tool from those local copies. You can see the time of the last scan for each community on the top page and on each community page.

If you have made changes in ScienceBase since then, you can requery ScienceBase using the "rescan" link at the end of the status line on the individual community pages (choose Summary on the top page, then read the top lines of the display).

Missing Keywords You Know Are Entered

There may be instances where you have added keywords for ISO Topic Category, LCC Project Category, LCC Deliverable Type, or LCC End User Type but the ScienceBase scanner is showing them as missing. This may have been an issue introduced for LCCs who used the template scripting (i.e., input metadata into a spreadsheet that Josh scripted into mdEditor to create your initial metadata records). Below is a possible way to check and solve that issue.

(1) If you go into the Keywords section of your record, you may see that there are entries under "Selected Keywords" but those selections aren't highlighted green in the tree of options.

(2) Click on the desired options in the tree, which will add a duplicate set of those keywords in "Selected Keywords."

(3) Delete the duplicate keywords **from the top of the list**.

(4) Now your keywords should be selected properly. You can re-publish and check the SB scanner again.

Automatic QA/QC Checks from DJ Case

Link to Automatic QA/QC List from DJ Case

To aid in our metadata improvements, DJ Case created an automated QA/QC system of checks. This is a dynamic list of errors that will update when you fix an error and republish your record. Note that the updates will only when the Science Catalog itself updates, which occurs overnight.

Below are definitions of each issue described in the list:

Warning Type	Definition
Allocation with unspecified recipient	One or more allocations in the metadata is missing a recipient. This is required.
Allocation with unspecified source	One or more allocations in the metadata is missing a source. This is required.
Allocation with recipient with unspecified contactType	One or more allocations in the metadata have a recipient contact that does not have "Contact Type" identified in the contact record. This is required.
Allocation with source with unspecified contactType	One or more allocations in the metadata have a source contact that does not have "Contact Type" identified in the contact record. This is required.
Allocation with no fiscal years identified	One or more allocations in the metadata is missing a fiscal year. This is required.
Allocation has a timePeriod spanning multiple fiscal years	One or more allocations in the metadata includes multiple fiscal years. There should be only a single fiscal year per allocation.
A responsible party has an invalid role (valid roles)	Invalid roles are likely leftover from items originally created on ScienceBase and then imported into mdEditor. You may not be able to see the erroneous roles unless you are in "View" mode for the mdEditor record, rather than in "Edit" mode.
An invalid resource type has been specified (valid types)	Invalid resource types are likely leftover from items originally created on ScienceBase and then imported into mdEditor. You may not be able to see the erroneous resource type unless you are in "View" mode for the mdEditor record, rather than in "Edit" mode.
Duplicate contact name	There are multiple unique Contact IDs in the mdJSON for the same "Contact Name."
Funding source should be "U.S. Fish and Wildlife Service"	One or more allocations have identified a funding source that should be U.S. Fish and Wildlife Service. For example, the source may specify "Ecological Services" or the name of an LCC rather than "U.S. Fish and Wildlife Service."

Manual QA/QC Checks

Link to Manual QA/QC List

Contacts Errors

Link to Contacts QA/QC List

DJ Case identified a list of errors in the Contacts during the initial creation of the Science Catalog. This is a static list of errors (i.e., it will not update when you fix an issue listed). The list contains a description of the contact error and the SBIDs for the records that contain that item.

Please update the "Fixed" column to "yes" when you have addressed a particular item.

Science Catalog Errors from Manual QA/QC from ASG

Link to Manual QA/QC List from ASG

This is a list of errors in the Science Catalog, as identified through manual QA/QC checks by the ASG. This is a living list that will be added to as other errors are identified.

Keyword typos are based on the records in the Science Catalog as of 10/22/18.

Once you have corrected the issue, please update the "Status" column to "Fixed."

Bulk Editing Resources

The resources below may be of assistance as you create and edit your metadata.

mdEditor Injector Script

Link: https://github.com/mmheller/mdEditorFileInjector

Purpose: to perform bulk edits to mdEditor files by injecting, replacing, or deleting mdJSON content. mdEditor files are files exported from the mdEditor web application (mdeditor.org). More information on mdJSON can be found at https://github.com/adiwg/mdJson-schemas

There are two demos available to help with metadata improvements:

Add Funding Administrators

Add Distribution Links (for products)

Point of Contact: Matt Heller (matthew_heller@fws.gov).

Injector Script: Funding

The following tutorial was developed by Matt Heller using the mdEditor File Injector script he developed, which can be used to do bulk edits on your mdEditor files. This demo specifically walks through how to add a contact with the role of "administrator" to funding allocations.

A recording of this demo is available for viewing at: https://mmancusa.webex.com/mmancusa/ldr.php?RCID=b368e65eafffc4c076e9a4993f438b42

You will need:

1. Access to some mdEditor files. Note: these must be mdEditor files, NOT the mdJSON files attached to the SB items.
2. Python installed on your PC.
    - If you have ArcGIS installed, there is a good chance Python is installed.

Steps

(1) Download script and other helpful files from GitHub.

a. Go to https://github.com/mmheller/mdEditorFileInjector and download all the files.

b. Unzip to any folder.

(2) Gather some mdEditor files for the demo test.

a. Create a folder named **Demo** somewhere convenient.

b. Copy/paste 2-5 of YOUR mdEditor files into the Demo folder.

(3) Build the string that will have the necessary arguments to run the script.

a. Open any text editor (e.g., notepad) and enter the following letters with Dashes on separate lines (**–C –D –F –f –T –O**).

For reference, the final version will look like this. Follow the specific steps below to write each line.

b. Enter the path to the Demo folder in line **–C**. Note: all files and files in subfolders will be processed by the script. No original files will be edited, copies will always be made.

c. Enter **"metadata|funding"** in line **–D**. This is the location in the JSON that we're telling the script to look for finding JSON text. Note: be sure to add double quotes for this argument.

d. For line **–F**

1. Copy/paste the path to the unzipped folder with all the injector script files.
2. AND copy/paste the file name **inject_FundingAdministrator.txt**

Make sure to separate the path and filename with a back slash. This holds all the text we will inject.

e. For line **–f**, do the same thing but with the file name **find_FundingAdminstrator.txt**. This holds all the text the script uses to find text to replace.

f. Add **False** to the **–T** line. This indicates we're not adding new contacts to the available contacts list.

g. Add **6** to the **–O** line. This specifies the option for the more complex find/replace.

(4) Edit the *inject_FundingAdministrator.txt* file with the Contact ID of your choice.

a. Open mdEditor, clear the cache, and then import one of the mdEditor files from the demo folder.

b. However you want to do it, copy the Contact ID of your choice.

c. Open **inject_FundingAdministrator.txt** in a text editor and overwrite the Contact ID value in the file. Save and then close the file.

> Note: The Contact ID you enter must be the same for all the mdEditor files you want to run through the processor (or are in the demo folder). If you have different Contact IDs to inject across different records, you must do these in separate iterations of the script with only the relevant mdEditor files for each contact ID. *If you have different Contact IDs to add **within the same record**, you cannot use the script and must edit those records manually in mdEditor.*

(5) Open the *find_FundingAdminstrator.txt* file.

Make sure it says:

(6) Inspect one or more of the mdEditor files in mdEditor.

a. Go to Funding. Choose an allocation where match is not selected and click "More." Then click "Edit" for the allocation. Scroll down and notice no entries under “Other Contacts.”

(7) Run the script.

a. Back in the text editor, add two blank lines in the beginning.

b. Find the path to your python.exe and enter in the 1st line. Example: **C:\Python27\ArcGISx6410.6\python.exe**

c. Find the path to your .py injector script file and enter in the 2nd line. Note: this will be in the folder you downloaded and unzipped. Example: **C:\Temp\mdEditorFileInjector-master\mdEditorFileInjector_v1.py**

d. Remove all the carriage returns and extra spaces, and save if desired. Note: if any of your file paths have spaces, make sure to enclose the full path/filename with double quotes.

e. Open a DOS prompt.

f. Copy/paste the text from your text editor into the command prompt to run.

(8) Inspect the results.

a. Open mdEditor and clear the cache.

b. Click Import. Go to the demo folder and into the new folder created. Note: each time the process runs it will create a new folder and add new files to this folder.

c. Select one of the new files to import.

d. Go to Funding. Choose an allocation where match is not selected and click "More." Then click "Edit" for the allocation. Scroll down and notice a new entry under “Other Contacts.”

Note: If it errors out, there’s a problem. Go to the demo folder and into the new folder created and do the following:

1. Note the filename that is a problem
2. Remove the file from the demo folder
3. Delete the new folder and files created from the last run
4. Rerun

Injector Script: Distribution Links

The following tutorial was developed by Matt Heller using the mdEditor File Injector script he developed, which can be used to do bulk edits on your mdEditor files. This demo specifically walks through how to add a Distribution Link. The injector script will look for a unique ScienceBase Identifier (SBID) that exists in the metadata and then build a URL for the **Distribution / Online Option** based on the SBID. The URL will be named "Product Web-page with Downloadable Files" and the Function selected will be "information."

A recording of this demo is available for viewing at: https://mmancusa.webex.com/mmancusa/ldr.php?RCID=b1a81ed0c41871e76f205d7f2f507008

You will need:

1. Access to some mdEditor files. Note: these must be mdEditor files, NOT the mdJSON files attached to the SB items.
2. Python installed on your PC.
    - If you have ArcGIS installed, there is a good chance Python is installed.

Steps

(1) Download script and other helpful files from GitHub.

a. Go to https://github.com/mmheller/mdEditorFileInjector and download all the files.

b. Unzip to any folder.

(2) Gather some mdEditor files for the demo test.

a. Create a folder named **Demo** somewhere convenient.

b. Copy/paste 2-5 of YOUR mdEditor files into the Demo folder.

(3) Build the string that will have the necessary arguments to run the script.

a. Open any text editor (e.g., notepad) and enter the following letters with Dashes on separate lines (**–C –T –O**)

b. Enter the path to the Demo folder in line **–C**. Note: all files and files in subfolders will be processed by the script. No original files will be edited, copies will always be made.

c. Add **False** to the -T line. This indicates we're not adding new contacts to the available contacts list.

d. Add **7** to the –O line. This specifies the option for the more complex find/replace

(4) Run the script.

a. Back in the text editor, add two blank lines in the beginning.

b. Find the path to your python.exe and enter in the 1st line. Example: **C:\Python27\ArcGISx6410.6\python.exe**

c. Find the path to your .py injector script file and enter in the 2nd line. Note: this will be in the folder you downloaded and unzipped. Example: **C:\Temp\mdEditorFileInjector-master\mdEditorFileInjector_v1.py**

d. Remove all the carriage returns and extra spaces, and save if desired. Note: if any of your file paths have spaces, make sure to enclose the full path/filename with double quotes.

e. Open a DOS prompt.

f. Copy/paste the text from your text editor into the command prompt to run.

(5) Inspect the results.

a. Open mdEditor and clear the cache.

b. Click Import. Go to the demo folder and into the new folder created. Note: each time the process runs it will create a new folder and add new files to this folder.

c. Select one of the new files to import.

d. Go to Distribution. Click Edit Distributors green button where the pointOfContact = LCC Network Data Steward.

e. Click Edit button in the Online Option section.

f. Notice the injected fields. The Name of the online resource is "Product Web-Page with Downloadable Files" and the URL listed is the ScienceBase item link. The Function is "information" (since the link is not a direct download of the data).

Note: If it errors out, there’s a problem. Verify the LCC Network Data Steward exists and the Contact ID matches **edc6b779-3352-4a81-8430-76bcce1bfcb3**

Help

mdEditor Help

Clicking the question mark icon will open the manual, which can be read online or downloaded as a PDF document.

Reporting Bugs

If you encounter bugs or errors when using mdEditor, please report them at the mdEditor Issues page on GitHub and specify the mdEditor version you are using (available in Settings). You must have a GitHub account in order to post.

Glossary of Terms

ADIwg

Alaska Data Integration working group

Auto-Save

A feature in mdEditor settings that allows information to be automatically saved as it is entered. Consult the **Settings** section of this manual for more information.

Customization

The ability afforded by open-source code to edit the code of an application (in this case mdEditor) according to the needs of the users.

FGDC

Federal Geographic Data Committee https://www.fgdc.gov/

FGDC CSDGM

Federal Geographic Data Committee's Content Standard for Digital Geospatial Metadata - FGDC-STD-001-1998 Includes Biological Data Profile
https://www.fgdc.gov/metadata/csdgm/

HTML

HTML stands for Hyper Text Markup Language. It is the standard markup language for creating Web pages. HTML is the 'human-readable' and printable report of the metadata content

ISO

International Organization for Standardization - ISO is an independent, non-governmental international organization with a membership of 162 national standards bodies.

Through its members, it brings together experts to share knowledge and develop voluntary, consensus-based, market relevant International Standards that support innovation and provide solutions to global challenges.

ISO 19110

International Standards Organization Geographic Information - Feature Catalogue 19110:2005

ISO 19110 defines the methodology for cataloguing feature types. It may be used as a basis for defining the universe of discourse being modelled in a particular application, or to standardize general aspects of real world features being modelled in more than one application. (International Organization for Standardization (2016). **ISO 19110:2016**. Retrieved from: https://www.iso.org/standard/57303.html)

ISO 19115-1

Defines the schema required for describing geographic information and services by means of metadata. It provides information about the identification, the extent, the quality, the spatial and temporal aspects, the content, the spatial reference, the portrayal, distribution, and other properties of digital geographic data and services. (International Organization for Standardization (2014). **ISO 19115-1:2014**. Retrieved from: https://www.iso.org/standard/53798.html)

ISO 19115-2

International Standards Organization Geographic Information - Metadata 19115-2:2009

Extends the existing geographic metadata standard by defining the schema required for describing imagery and gridded data. It provides information about the properties of the measuring equipment used to acquire the data, the geometry of the measuring process employed by the equipment, and the production process used to digitize the raw data. This extension deals with metadata needed to describe the derivation of geographic information from raw data, including the properties of the measuring system, and the numerical methods and computational procedures used in the derivation. The metadata required to address coverage data in general is addressed sufficiently in the general part of ISO 19115. (International Organization for Standardization (2009). ISO 19115-2:2009. Retrieved from: https://www.iso.org/standard/39229.html)

JSON

Javascript Object Notation, a general purpose format like CSV.

Keywords

Words used in an information retrieval system to indicate the content of a document.

localStorage Cache

localStorage Cache allows an application to store data locally, in a user's browser. Storing information on the browser's local storage cache (instead of a normal file cache) means that if you use a different browser to access the mdEditor, it will not show the data you've imported from your first browser. It also means that if you clear your browser's cache, it will generally not clear your mdEditor records. However, depending upon your browser settings (E.g., in Chrome, if the "*cookies and other site data*" option is checked), clearing your browser cache may still clear your mdEditor data.

mdEditor

Web application for authoring and editing metadata, for both projects and datasets.

mdEditor File

A mdJSON file created by mdEditor that contains all of the information contained in mdJSON, along with mdEditor settings. This can be exported and shared with collaborators, imported into another record set, or saved to a local workstation as a backup or archival copy.

mdJSON

ADIwg standard for encoding project and data metadata, based on JavaScript Object Notation (JSON).

mdJSON File

An mdJSON file that is proprietary to the Metadata toolkit developed by the Alaska Data Integration Working Group (ADIWG), learn more at [https://adiwg.github.io/mdTools/].

mdTranslator

Open-source Ruby software application for translating between metadata standards. Metadata is input in one of the supported ‘reader’ formats and output in one of the supported ‘writer’ formats. Available as Ruby gem or Command-Line-Interface.

Metadata

Metadata is a set of data that describes and gives information about other data.

Metadata Repositories

A server where metadata is published to.

ParentID

Identifier for a folder on a database where records will be stored upon publishing.

sbJSON

U.S. Geological Survey’s standard for documenting records ingested into ScienceBase Catalog. The format used to define the attributes of ScienceBase items.

ScienceBase

A USGS collaborative scientific data and information management platform used directly by science teams. ScienceBase provides access to aggregated information derived from many data and information domains, including feeds from existing data systems, metadata catalogs, and scientists contributing new and original content. ScienceBase architecture is designed to help science teams and data practitioners centralize their data and information resources to create a foundation needed for their work. ScienceBase, both original software and engineered components, is released as an open source project to promote involvement from the larger scientific programming community both inside and outside the USGS. (USGS (2018). *About ScienceBase.* Retrived from: https://www.sciencebase.gov/about/content/about-sciencebase).

URI

Uniform Resource Identifier is a string of characters used to identify a resource. A URL is a type of URI.

Documentation Guide

About this guide

Who is this guide for?

This guide is intended for parties interested in contributing to this documentation.

What is it about?

This guide describes a recommended workflow and required conventions to be used when creating content.

Workflow

Setup Environment

While the online editor may be used, the most efficient way to create documentation is to install the GitBook Toolchain locally. See https://toolchain.gitbook.com/ for detailed instructions. The short version follows.

The following is required:

- NodeJS (v4.0.0 and above is recommended)
- git
- A Markdown editor/IDE (ATOM is a good open source choice)
- Windows, Linux, Unix, or Mac OS X

1. Install `gitbook-cli` using npm:

```
$ npm install gitbook-cli -g
```

2. Clone the mdEditor GitBook:

```
$ git clone https://git.gitbook.com/cookmt/mdeditor-for-lccs.git
```

3. Setup GitBook

```
$ cd mdEditor-for-lccs
$ gitbook install
```

4. Start the local GitBook server

```
$ gitbook serve
```

5. Open a browser to: http://localhost:4000

Style Guide

This section covers styling conventions required for this documentations. Some of the conventions rely on plug-ins that enhance the native GitBook Markdown functionality. In some instances, the effects of the plugins are not displayed until after the book has been generated.

Headings

Please use headings to define page sections. Heading levels should appear sequentially without gaps (don't skip heading levels). Headings should start at Level 1 for the page title. Headings should not be used purely to define font styles - if absolutely necessary, use CSS for that. Following this convention will make it possible to parse the markdown programmatically, e.g. to dynamically create a table of contents.

Lists

Ordered lists

Ordered lists are processed irrespective of the actual number assigned to each list item. For Example:

```
1. first
2. second
3. third
```

> 1. first

2. second
3. third

is rendered the same as:

```
1. first
12. twelfth
30. thirtieth
```

1. first
2. twelfth
3. thirtieth

Therefore, one recommended convention is to use `1.` for every item in an ordered list. This makes it easier to insert or remove items from the list, at the expense of slightly less readable Markdown. If you choose to sequentially order the list items, you **must** make sure the numbers are sequential to avoid confusion.

List headings

Headings may be use in lists. However, special handling is required to ensure bullets for ordered lists are styled appropriately.

The `tasks` tag is available for styling "task lists". For simplicity, all of the various heading levels are styled the same.

```
Example without task tag


1. ## Level 2
1. ### Level 3
1. ###### Level 6
```

Example without task tag

1. **Level 2**
2. **Level 3**
3. **Level 6**

```
Example with task tag


<!-- tasks -->
1. ## Level 2
1. ### Level 3
1. ###### Level 6
<!-- endtasks -->
```

Example with task tag

1. **Level 2**
2. **Level 3**
3. **Level 6**

Icons

FontAwesome icons are available. Use an `<i>` tag to render the chosen icon.

```
<i class="fa fa-smile-o"> </i> Happy Birthday <i class="fa fa-birthday-cake"></i>
```

Happy Birthday

Buttons

Bootstrap 3 style buttons are supported. Use a `<span>` tag since these are for documentation only. Icons may be combined with buttons.

Default Primary Success Info Extra - Small Warning - Small Danger - Large Link

```
<!-- Standard button -->
<span class="btn btn-default">Default</span>

<!-- Provides extra visual weight and identifies the primary action in a set of buttons -->
<span class="btn btn-primary">Primary</span>

<!-- Indicates a successful or positive action -->
<span class="btn btn-success"><i class="fa fa-check"></i> Success</span>

<!-- Contextual button for informational alert messages -->
<span class="btn btn-info btn-xs">Info Extra - Small</span>

<!-- Indicates caution should be taken with this action -->
<span class="btn btn-warning btn-sm">Warning - Small</span>

<!-- Indicates a dangerous or potentially negative action -->
<span class="btn btn-danger btn-lg">Danger - Large</span>

<!-- Deemphasize a button by making it look like a link while maintaining button behavior -->
<span class="btn btn-link">Link</span>
```

Hints

Styled hint blocks are supported.

```
{% hint style='info' %}
Important info: this note needs to be highlighted
{% endhint %}
```

There are five supported variations.

- `info` (default)
- `tip`
- `danger`
- `working`
- `plain`

> Info: this note needs to be highlighted.

> Tip: 20% is customary.

Danger: this is going to blow up!

Working: for the man every night and day...

Plain: boooooooorrrrring.

Screenshots

The following software is required:

- Libre Office Draw
- A tool to capture screenshots
- Windows, Linux, Unix, or Mac OS X

Types of screenshots

1. *basic* screenshots have no annotation or markup applied
2. *annotated* screenshots have markup applied, e.g. callouts, highlights, etc.

Requirements for all screenshots

1. Minimum 1200px wide
2. Must include a caption
3. PNG format
4. Generally browser window captures should only contain minimum user interface controls, without navigation toolbar, tab bar, bookmarks toolbar, or status bar. See Bookmarlet for Screenshots.

   Example browser screenshot.{caption class=border}

5. Images should be stored in the `assets` directory corresponding to the section in which the image appears. Exceptions to this requirement are made for images used in multiple sections.
6. Image sizes should be as small as possible without sacrificing quality.

   Usually significant size reduction can be achieved by color-type or bit-depth

   reduction. pngcrush is a good tool for this.

Requirements for annotated screenshots

1. Use LibreOffice Draw to create the annotations
   - A template is available here `/assets/documentation-guide/callouts-template.odg`

    - Each screenshot should be placed on a new page
    - Whenever possible place annotations in callouts *outside* of the image or

      in a way that does not cover user interface elements

    - Name the page using the name of the PNG file
    - Export the screenshot to PNG
        - only export the
        - compression level 6
        - 1200 pixels wide
2. All annotated screenshots for a section should be stored in a single `.odg` file.
3. Save the LibreOffice Draw file (.odg) in the directory with the screenshots

 Creating screenshots using LibreOffice Draw{caption class=border}

Screenshot captions

To apply a caption to a screenshot use this syntax in the Markdown.

```
![caption goes here](/assets/path/to/image){caption}
```

 Screenshot with caption{caption}

To apply a border to a screenshot, add `class=border`.

```
![caption goes here](/assets/path/to/image){caption class=border}
```

 Screenshot with border{caption class=border}

Applying the `{caption}` to a image will also indent the image from the surrounding text.

Bookmarlet for Screenshots

Use this bookmarlet: Plain Window. Drag the link to your bookmarks bar or create a bookmark with the code below. Clicking the bookmark will open the current webpage in a plain window that is 1200px wide. Re-size to needed height and take a screenshot. More about bookmarlets here: https://www.wikipedia.org/wiki/Bookmarklet.

```
javascript:(function(){var windowObjectReference;var strWindowFeatures='menubar=no,location=yes,resizable=yes,scrollbars=yes,s
```